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=> fil reg
FILE 'REGISTRY' ENTERED AT 16:06:45 ON 30 JAN 2007
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STRUCTURE FILE UPDATES:   29 JAN 2007  HIGHEST RN 918776-45-1
DICTIONARY FILE UPDATES:  29 JAN 2007  HIGHEST RN 918776-45-1

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predicted properties as well as tags indicating availability of
experimental property data in the original document.  For information
on property searching in REGISTRY, refer to:

http://www.cas.org/ONLINE/UG/regprops.html

=> d sta que l56
L42                 STR
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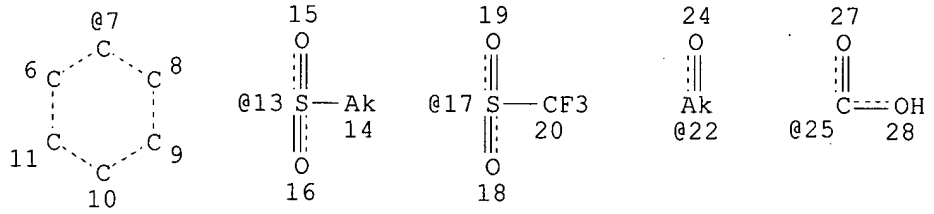

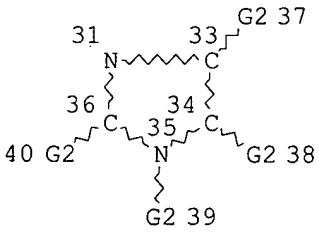


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DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RSPEC   6  33
NUMBER OF NODES IS  28

STEREO ATTRIBUTES: NONE
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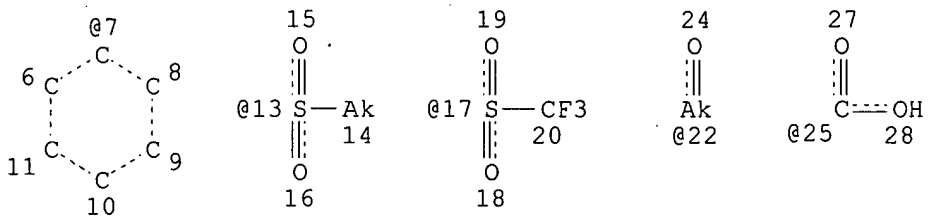
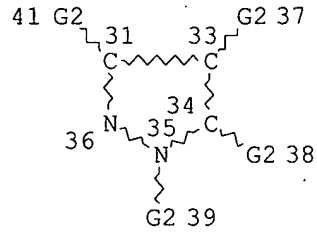
L46 6953 SEA FILE=REGISTRY SUB=L44 CSS FUL L42 NOT L***
L47 STR





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DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RSPEC 6 33
NUMBER OF NODES IS 28

STEREO ATTRIBUTES: NONE
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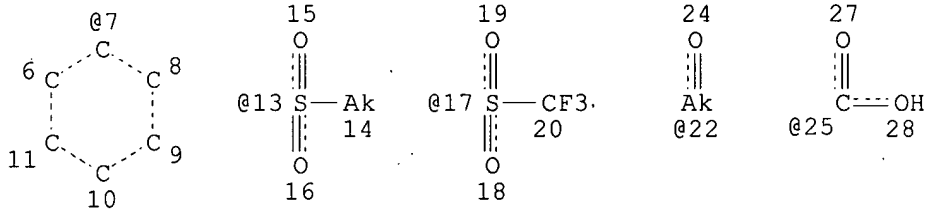
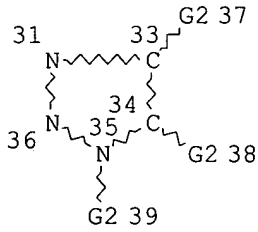
L50 STR



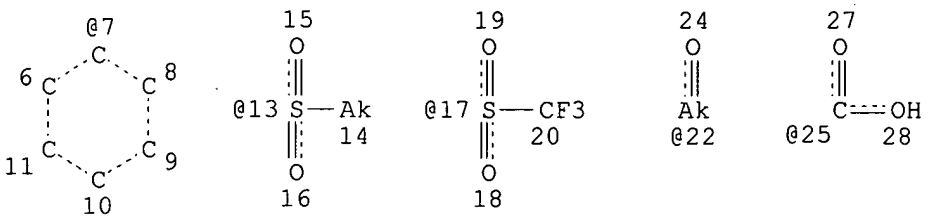


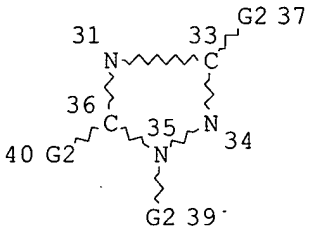
VAR G2=H/AK/N/25/NO2/7/X/22/CN/CF3/13/17
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:

RSPEC 6 33
NUMBER OF NODES IS 27

STEREO ATTRIBUTES: NONE
L51 STR





VAR G2=H/AK/N/25/NO2/7/X/22/CN/CF3/13/17
NODE ATTRIBUTES:
DEFAULT MLEVEL IS ATOM
DEFAULT ECLEVEL IS LIMITED

GRAPH ATTRIBUTES:
RSPEC 6 33
NUMBER OF NODES IS 27

STEREO ATTRIBUTES: NONE
L55 2946 SEA FILE=REGISTRY CSS FUL L50 OR L51
L56 15107 SEA FILE=REGISTRY ABB=ON PLU=ON (L46 OR L49 OR L55)

=> fil hcaplus
FILE 'HCAPLUS' ENTERED AT 16:07:02 ON 30 JAN 2007
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
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FILE COVERS 1907 - 30 Jan 2007 VOL 146 ISS 6
FILE LAST UPDATED: 29 Jan 2007 (20070129/ED)

New CAS Information Use Policies, enter HELP USAGETERMS for details.

This file contains CAS Registry Numbers for easy and accurate substance identification.

=> d l149 bib abs hitind hitstr retable tot

L149 ANSWER 1 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2006:29452 HCAPLUS
DN 144:131802
TI Hybrid solar cells with thermal deposited semiconductive oxide layer
IN Nelles, Gabrielle; Yasuda, Akio; Schmidt, Hans-Werner; Thelakkat, Mukundan; Schmitz, Christoph
PA Germany
SO U.S. Pat. Appl. Publ., 14 pp., Cont.-in-part of U.S. Ser. No. 799,257.
CODEN: USXXCO
DT **Patent**
LA English
FAN.CNT 2

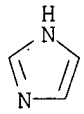
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2006008580	A1	20060112	US 2005-32326	20050110 <--
	EP 1209708	A1	20020529	EP 2000-125784	20001124 <--
	EP 1209708	B1	20070117		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	US 2002117201	A1	20020829	US 2001-989848	20011121 <--
	US 6706962	B2	20040316		
	US 2004168718	A1	20040902	US 2004-799257	20040312 <--
PRAI	EP 2000-125784	A	20001124 <--		
	US 2001-989848	A1	20011121 <--		
	US 2004-799257	A2	20040312		

AB A hybrid solar cell device comprising: a substrate material (substrate), an **electrode** material (EM), a hole transport material (HTM), a dye material (dye), and a semiconductive oxide layer (SOL), wherein a structure of the hybrid solar cell device is selected from a group consisting of: substrate+EM/HTM/dye/SOL/EM, or substrate+EM/SOL/dye/HTM/EM, or substrate+EM/HTM/SOL/EM, and wherein the EM is selected from a group consisting of a transparent conductive oxide (TCO), a transparent conductive polymer or a transparent organic material, and a metal, with at least one of the EM layer(s) of the hybrid solar cell being a TCO, and wherein the SOL comprises a dense semiconductive oxide layer.
INCL 427162000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Azo dyes
Dyes
Electrodes
Semiconductor materials
Solar cells
Substituent effects
(hybrid solar cells with thermal deposited semiconductive oxide layer)
IT Glass, uses
Polyanilines
Polyphosphazenes
Polysilanes
Porphyrins
Silazanes
RL: DEV (Device component use); USES (Uses)
(hybrid solar cells with thermal deposited semiconductive oxide layer)
IT 84-65-1, Anthraquinone 86-74-8D, Carbazole, derivs. 110-02-1,

Thiophene 188-72-7, Terrylene 198-55-0, Perylene **288-32-4D**, Imidazole, derivs. 574-93-6, Phthalocyanine 574-93-6D, Phthalocyanine, derivs. 588-59-0D, Stilbene, compds. 603-34-9D, derivs. 1047-16-1, Quinacridone 1047-16-1D, Quinacridone, compds. 1065-80-1, Hexabenzocoronene 1306-38-3, Ceria, uses 1309-64-4, Antimony oxide, uses 1313-96-8, Niobium oxide 1314-13-2, Zinc oxide, uses 1314-35-8, Tungsten trioxide, uses 1317-36-8, Lead oxide, uses 1332-29-2, Tin oxide 1344-28-1, Alumina, uses 7429-90-5, Aluminum, uses 7439-95-4, Magnesium, uses 7440-57-5, Gold, uses 7440-70-2, Calcium, uses 7631-86-9, Silica, uses 7789-24-4, Lithium fluoride, uses 11120-54-0D, Oxadiazole, derivs. 12060-18-3, Zirconium trioxide 12060-59-2, Strontium titanium oxide (SrTiO3) 12250-93-0, Copper aluminum oxide CuAlO2 12597-68-1, Stainless steel, uses 13463-67-7, Titania, uses 13598-78-2D, Silanamine, derivs. **25233-34-5**, **Polythiophene** 26201-32-1, Titanylphthalocyanine 36118-45-3D, Pyrazoline, derivs. 37306-44-8D, Triazole, derivs. 39455-90-8D, Pyrazolone, derivs. 50926-11-9, Indium tin oxide 55035-43-3 57348-57-9, Strontium copper oxide SrCuO2 89114-75-0 95270-88-5, Polyfluorene 126213-51-2, Poly(3,4-ethylenedioxythiophene 182439-44-7, Porphines
RL: DEV (Device component use); USES (Uses)
(hybrid solar cells with thermal deposited semiconductive oxide layer)

IT **288-32-4D**, Imidazole, derivs. **25233-34-5**, **Polythiophene**
RL: DEV (Device component use); USES (Uses)
(hybrid solar cells with thermal deposited semiconductive oxide layer)

RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



RN 25233-34-5 HCAPLUS
CN Thiophene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 110-02-1
CMF C4 H4 S

L149 ANSWER 2 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2005:672920 HCAPLUS
DN 143:176217
TI Conductive polymers for **electrode** materials of **electrochemical cells**
IN **Nobuta, Tomoki; Nishiyama, Toshihiko; Mitani, Masaya**; Takahashi, Naoki; Yoshinari, Tetsuya
PA Japan
SO U.S. Pat. Appl. Publ., 21 pp.

CODEN: USXXCO
DT Patent
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005165214	A1	20050728	US 2005-42900	20050125
	JP 2005209576	A	20050804	JP 2004-17011	20040126
	KR 2005077017	A	20050729	KR 2005-6054	20050122
	CN 1812170	A	20060802	CN 2005-10005753	20050125
PRAI	JP 2004-17011	A	20040126		

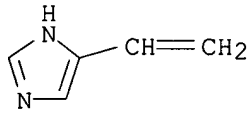
AB This invention relates to a polymer having a chain structure of a repeating unit of a **proton-conducting** compound which causes an **electrochem.** redox reaction in a solution of a **proton** source to act as an **electrode** active material, and a heterocyclic compound structure; and an **electrochem. cell** comprising the polymer as an **electrode** active material.
IC ICM H01M0004-60
INCL 528422000
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, **76**
ST conductive polymer **electrode** material **electrochem cell; battery** conductive polymer **electrode** material; capacitor conductive polymer **electrode** material
IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(block; conductive polymers for **electrode** materials of **electrochem. cells**)
IT **Battery anodes**
Battery cathodes
Capacitor electrodes
Conducting polymers
Electrochemical cells
Secondary batteries
(conductive polymers for **electrode** materials of **electrochem. cells**)
IT Carbon black, uses
Carbon fibers, uses
Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(conductive polymers for **electrode** materials of **electrochem. cells**)
IT Capacitors
(double layer; conductive polymers for **electrode** materials of **electrochem. cells**)
IT Capacitors
(redox; conductive polymers for **electrode** materials of **electrochem. cells**)
IT 70381-95-2
RL: DEV (Device component use); USES (Uses)
(conductive polymers for **electrode** materials of **electrochem. cells**)
IT 91-95-2DP, [1,1'-Biphenyl]-3,3',4,4'-tetramine, Block copolymers containing 3010-82-0DP, 1,4-Benzenedicarboxamide, Block copolymers containing **3718-04-5DP**, Block copolymers containing **28576-59-2DP**, Block copolymers containing **52232-62-9DP**, Block copolymers containing **652968-48-4P 860792-82-1P**
RL: DEV (Device component use); SPN (Synthetic preparation); PREP

(Preparation); USES (Uses)
(conductive polymers for **electrode** materials of **electrochem. cells**)

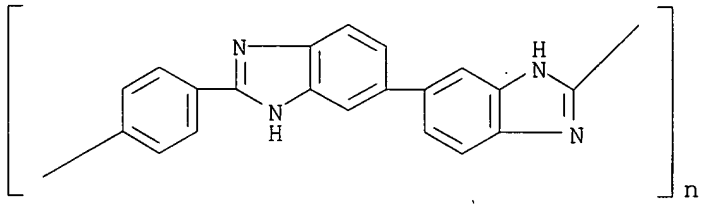
IT 24937-79-9, Pvdf
RL: MOA (Modifier or additive use); USES (Uses)
(conductive polymers for **electrode** materials of **electrochem. cells**)

IT **3718-04-5DP**, Block copolymers containing **28576-59-2DP**, Block copolymers containing **52232-62-9DP**, Block copolymers containing **652968-48-4P 860792-82-1P**
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(conductive polymers for **electrode** materials of **electrochem. cells**)

RN 3718-04-5 HCAPLUS
CN 1H-Imidazole, 4-ethenyl- (9CI) (CA INDEX NAME)



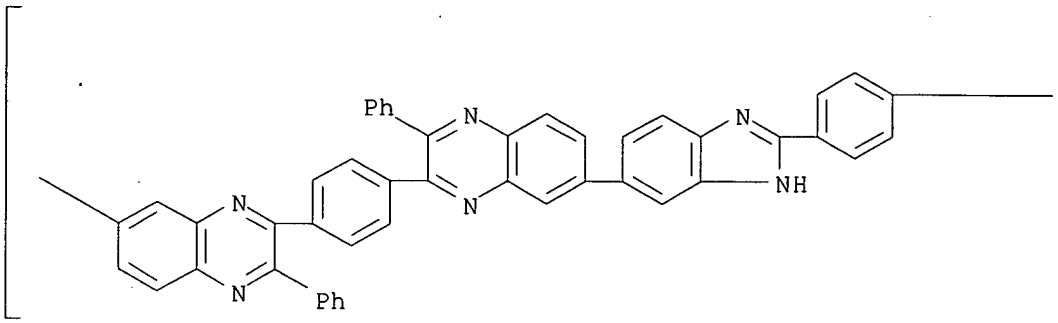
RN 28576-59-2 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1,4-phenylene) (9CI) (CA INDEX NAME)



RN 52232-62-9 HCAPLUS
CN Poly[(3,3'-diphenyl[biquinoxaline]-2,2'-diyl)-1,4-phenylene] (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 652968-48-4 HCAPLUS
CN Poly[(3-phenyl-7,2-quinoxalinediyl)-1,4-phenylene(3-phenyl-2,7-quinoxalinediyl)-1H-benzimidazole-5,2-diyl-1,4-phenylene-1H-benzimidazole-2,5-diyl] (9CI) (CA INDEX NAME)

PAGE 1-A



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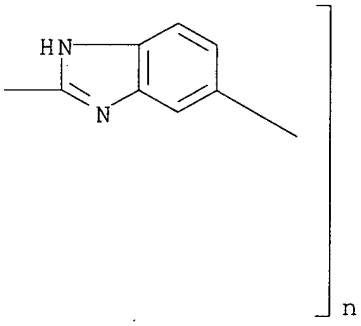

RN 860792-82-1 HCAPLUS
CN Poly[[3,3'-bis[4-(1H-benzimidazol-2-yl)phenyl][biquinoxaline]-2,2'-diyl]-1,4-phenylene] (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L149 ANSWER 3 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2005:283963 HCAPLUS
DN 142:358037
TI Polymer electrolyte membrane **fuel cell** system
IN George, Paul E.; Saunders, James H.; Vijayendran, Bhima R.
PA USA
SO U.S. Pat. Appl. Publ., 39 pp., Cont.-in-part of Appl. No. PCT/US03/03864.
CODEN: USXXCO
DT **Patent**
LA English
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005069735	A1	20050331	US 2004-913293	20040806 <--
	WO 2003067695	A2	20030814	WO 2003-US3864	20030206 <--
	WO 2003067695	A3	20031127		

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PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,
UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

PRAI US 2002-354770P P 20020206 <--
WO 2003-US3864 A2 20030206 <--

AB The invention relates to a **fuel cell** system comprising: a fuel processor for producing hydrogen from a fuel; and a **fuel cell** stack including a plurality of polymer electrolyte membranes and a plurality of **electrodes**; where the polymer electrolyte membrane comprises a **proton conducting** hydrocarbon-based polymer membrane, the polymer having a backbone and having acidic groups on side chains attached to the backbone. The invention also relates to methods of removing contaminants from the **fuel cell electrode**.

IC ICM H01M0008-00
ICS H01M0008-10

INCL 429013000; 429032000; 429033000

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST polymer electrolyte membrane **fuel cell** system

IT Oligomers
Polymers, uses
RL: DEV (Device component use); USES (Uses)
(hydrocarbon-based; polymer electrolyte membrane **fuel cell** system)

IT Polymer electrolytes
(membrane; polymer electrolyte membrane **fuel cell** system)

IT Polysulfones, uses
RL: DEV (Device component use); USES (Uses)
(polyether-, sulfonated; polymer electrolyte membrane **fuel cell** system)

IT **Fuel cell electrodes**
Ionic conductivity
Membranes, nonbiological
Reforming apparatus
(polymer electrolyte membrane **fuel cell** system)

IT Polymer blends
RL: DEV (Device component use); USES (Uses)
(polymer electrolyte membrane **fuel cell** system)

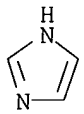
IT **Fuel cells**
(polymer electrolyte; polymer electrolyte membrane **fuel cell** system)

IT Polyethers, uses
RL: DEV (Device component use); USES (Uses)
(polysulfone-, sulfonated; polymer electrolyte membrane **fuel cell** system)

IT 630-08-0, Carbon monoxide, miscellaneous
RL: MSC (Miscellaneous)
(contaminant; polymer electrolyte membrane **fuel cell** system)

IT 127-19-5, Dimethylacetamide **288-32-4**, Imidazole, uses
872-50-4, n-Methylpyrrolidone, uses 7778-18-9, Calcium sulfate
12067-99-1, Phosphotungstic acid
RL: MOA (Modifier or additive use); USES (Uses)
(polymer electrolyte membrane **fuel cell** system)

IT 1333-74-0P, Hydrogen, uses
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymer electrolyte membrane **fuel cell** system)
IT 67-56-1, Methanol, uses 584-08-7, Potassium carbonate 7447-41-8, Lithium chloride, uses 7647-14-5, Sodium chloride, uses 7778-80-5, Potassium sulfate, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polymer electrolyte membrane **fuel cell** system)
IT **288-32-4**, Imidazole, uses
RL: MOA (Modifier or additive use); USES (Uses)
(polymer electrolyte membrane **fuel cell** system)
RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



L149 ANSWER 4 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2005:15771 HCAPLUS
DN 142:97499
TI Hydrogen storage by reversible hydrogenation of pi-conjugated substrates
IN Pez, Guido Peter; Scott, Aaron Raymond; Cooper, Alan Charles; Cheng, Hansong
PA USA
SO U.S. Pat. Appl. Publ., 58 pp., Cont.-in-part of U.S. Ser. No. 430,246.
CODEN: USXXCO
DT **Patent**
LA English
FAN.CNT 4

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005002857	A1	20050106	US 2004-833484	20040427 <--
	US 2004223907	A1	20041111	US 2003-430246	20030506 <--
	US 7101530	B2	20060905		
	CA 2465555	A1	20041106	CA 2004-2465555	20040429 <--
	CA 2524846	A1	20050106	CA 2004-2524846	20040506 <--
	WO 2005000457	A2	20050106	WO 2004-US14034	20040506 <--
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	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
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	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK				
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PRAI	US 2003-430246	A2	20030506 <--		

US 2004-833467 A 20040427
US 2004-833484 A 20040427
WO 2004-US14034 W 20040506

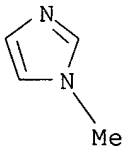
AB Processes are provided for the storage and release of hydrogen by means of a substantially reversible catalytic hydrogenation of extended pi-conjugated substrates which include large polycyclic aromatic hydrocarbons, polycyclic aromatic hydrocarbons with nitrogen heteroatoms, polycyclic aromatic hydrocarbons with oxygen heteroatoms, polycyclic aromatic hydrocarbons with alkyl, alkoxy, nitrile, ketone, ether or polyether substituents, pi-conjugated mols. comprising 5 membered rings, pi-conjugated mols. comprising six and five membered rings with nitrogen or oxygen hetero atoms, and extended pi-conjugated organic polymers. The hydrogen, contained in the at least partially hydrogenated form of the extended pi-conjugated system, can be facilely released for use by a catalytic dehydrogenation of the latter in the presence of a dehydrogenation catalyst which can be effected by lowering the hydrogen gas pressure, generally to pressures greater than 0.1 bar or raising the temperature to less than 250° or less, or by a combination of these two process parameters.

IC ICM C01B0003-02
ICS B65B0003-00; C10G0035-06; F17B0001-00
INCL 423648100; 206000700; 048174000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST hydrogen storage reversible hydrogenation pi conjugated substrate; **fuel cell** hydrogen storage reversible hydrogenation pi conjugated substrate
IT Dehydrogenation
Dehydrogenation catalysts
Fuel cells
Hydrogenation
Hydrogenation catalysts
Hydrogenation enthalpy
Pitch
(hydrogen storage by reversible hydrogenation of pi-conjugated substrates)
IT Cyclic compounds
Heterocyclic compounds
Oligomers
Polyanilines
Polymers, uses
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(hydrogen storage by reversible hydrogenation of pi-conjugated substrates)
IT **Heterocyclic compounds**
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(**nitrogen**; hydrogen storage by reversible hydrogenation of pi-conjugated substrates)
IT 86-28-2, n-Ethylcarbazole 86-73-7, Fluorene 86-74-8, Carbazole 91-22-5, Quinoline, uses 95-13-6, Indene 100-47-0, Benzonitrile, uses 128-70-1, Pyranthrone 129-00-0, Pyrene, uses 132-65-0, Dibenzothiophene 190-26-1, Ovalene 191-07-1, Coronene 197-61-5, Rubicene 198-55-0, Perylene 198-87-8, Indolo[3,2-a]carbazole 203-65-6, 4H-Benzo[def]carbazole 208-96-8, Acenaphthylene 213-46-7, Picene 241-35-0, Indolo[2,3-b]carbazole 244-33-7, 5H-Dibenzoborole 255-53-8, Pyrazino[2,3-b]pyrazine 260-94-6, Acridine 270-48-4,

1H-1-Benzoborole 272-10-6, Phosphindole 290-37-9, Pyrazine 603-76-9, n-Methylindole **616-47-7**, n-Methylimidazole 623-26-7, Terephthalonitrile 875-79-6 1065-80-1, Hexabenzocoronene 1484-09-9, n-Isopropylcarbazole 1484-10-2 1484-12-4, n-Methylcarbazole 2435-85-0, HexaDecahydropyrene 5856-89-3, N-Lithiodiphenylamine 6033-87-0, Potassiumcarbazole 7075-70-9, 1,7-Dihydrobenzo[1,2-b:5,4-b']dipyrrole 7395-04-2 10365-94-3, 1,3,5-Benzenetricarbonitrile 11140-68-4, Titanium hydride 12678-01-2, Phenanthroline 13390-92-6, N-Lithiocarbazole 20330-24-9, Hexahydropyrene **25067-59-8**, Poly(9-vinylcarbazole) **25233-30-1**, **Polyaniline** 27569-42-2 28779-32-0, Dihydropyrene **30604-81-0**, **Polypyrrole** 40876-94-6, 1-Ethyl-2-methylindole 55101-66-1, Decahydropyrene 55986-39-5 58310-24-0 66161-17-9, Tetrahydropyrene 75833-66-8 79790-37-7, 1,4,5,8,9,12-Hexaazatriphenylene **82451-55-6**, Polyindole **90338-04-8** 819802-22-7 819802-23-8 819802-24-9
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(hydrogen storage by reversible hydrogenation of pi-conjugated substrates)

IT **616-47-7**, n-Methylimidazole **25067-59-8**, Poly(9-vinylcarbazole) **25233-30-1**, **Polyaniline** **30604-81-0**, **Polypyrrole** **82451-55-6**, Polyindole **90338-04-8**
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(hydrogen storage by reversible hydrogenation of pi-conjugated substrates)

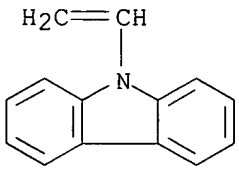
RN 616-47-7 HCAPLUS
CN 1H-Imidazole, 1-methyl- (9CI) (CA INDEX NAME)



RN 25067-59-8 HCAPLUS
CN 9H-Carbazole, 9-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

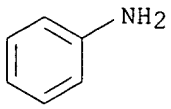
CRN 1484-13-5
CMF C14 H11 N



RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

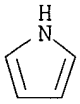
CRN 62-53-3
CMF C6 H7 N



RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

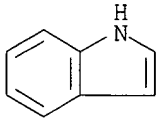
CRN 109-97-7
CMF C4 H5 N



RN 82451-55-6 HCAPLUS
CN 1H-Indole, homopolymer (9CI) (CA INDEX NAME)

CM 1

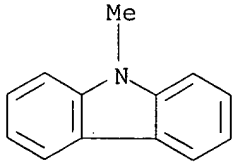
CRN 120-72-9
CMF C8 H7 N



RN 90338-04-8 HCAPLUS
CN 9H-Carbazole, 9-methyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1484-12-4
CMF C13 H11 N



L149 ANSWER 5 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:1156748 HCAPLUS
DN 142:77635
TI Ionic liquids and ionic liquid acids with high temperature stability for **fuel cell** and other high temperature applications
IN Angell, C. Austen; Xu, Wu; Belieres, Jean-Philippe; Yoshizawa, Masahiro
PA Arizona Board of Regents A Body Corporate Acting On Behalf of Arizona State University, USA
SO PCT Int. Appl., 76 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004114445	A1	20041229	WO 2004-US13719	20040503 <--
	WO 2004114445	B1	20050210		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	EP 1618618	A1	20060125	EP 2004-751209	20040503 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
	JP 2007500429	T	20070111	JP 2006-532544	20040503 <--
PRAI	US 2003-467796P	P	20030501	<--	
	US 2003-501626P	P	20030908		
	WO 2004-US13719	W	20040503		

AB Disclosed are developments in high temperature **fuel cells** including ionic liqs. with high temperature stability and the storage of inorg. acids as di-anion salts of low volatility. The formation of ionically **conducting** liqs. of this type having **conductivities** of unprecedented magnitude for nonaq. systems is described. The stability of the dianion configuration is shown to play a role in the high performance of the noncorrosive **proton**-transfer ionic liqs. as high temperature **fuel cell** electrolytes. Performance of simple H2 (g) electrolyte/O2 (g) **fuel cells** with the new electrolytes is described. Superior performance both at ambient temperature and temps. up to and above 200° are achieved. Both neutral **proton** transfer salts and the acid salts with HSO-4 anions, give good results, the bisulfate case being particularly good at low temps. and very high temps. The performance of all electrolytes is improved by the addition of a small amount of nonvolatile base of pKa value intermediate between those of the acid and base that make the bulk electrolyte. The preferred case is the imidazole-doped ethylammonium hydrogen sulfate which yields behavior superior in all respects to that of the industry standard phosphoric acid electrolyte.
IC ICM H01M0008-00
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST **fuel cell** ionic liq use; imidazole doped ethylammonium hydrogen sulfate electrolyte **fuel cell**

IT Electric conductivity
Fuel cell electrolytes
Fuel cells
Ionic liquids
(ionic liqs. and ionic liquid acids with high temperature stability for **fuel cell** and other high temperature applications)

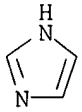
IT 75-04-7, Ethylamine, uses **288-32-4**, Imidazole, uses 7697-37-2, Nitric acid, uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; ionic liqs. and ionic liquid acids with high temperature stability for **fuel cell** and other high temperature applications)

IT 1341-49-7, Ammonium hydrogen fluoride 2805-17-6 20748-72-5 22113-86-6, Ethylammonium nitrate 22113-87-7, Methylammonium nitrate 30781-73-8, Dimethylammonium nitrate 53226-35-0 55145-87-4, uses 60717-38-6 71173-55-2 815574-79-9 815574-80-2 815574-81-3 815574-82-4 815574-83-5 815574-84-6 815574-85-7 815574-86-8
RL: DEV (Device component use); USES (Uses)
(ionic liqs. and ionic liquid acids with high temperature stability for **fuel cell** and other high temperature applications)

IT 815579-63-6
RL: DEV (Device component use); USES (Uses)
(nonvolatile base-doped; ionic liqs. and ionic liquid acids with high temperature stability for **fuel cell** and other high temperature applications)

IT **288-32-4**, Imidazole, uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; ionic liqs. and ionic liquid acids with high temperature stability for **fuel cell** and other high temperature applications)

RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Lu	2002			US 20020177039 A1	
Narayanan	2003			US 20030148162 A1	

L149 ANSWER 6 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:944007 HCAPLUS
DN 142:201427
TI Polyelectrolyte film for **fuel cell** and its manufacture
IN Song, Min Kyu
PA S. Korea
SO Repub. Korean Kongkae Taeho Kongbo, No pp. given
CODEN: KRXXA7
DT **Patent**
LA Korean
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	KR 2003032321	A	20030426	KR 2001-64040	20011017 <--
PRAI	KR 2001-64040		20011017 <--		

AB The film comprises 2.5-95% of ion exchange resin having cation exchange radical at side chain, 2.5-95% of ≥1 polymer selected from polybenzimidazole, polypyridine, polypyrimidine, polyimidazole, polybenzothiazole, polybenzoxazole, polyoxadiazole, **polyquinoxaline**, and polythiadiazole, and 2.5-50% of ion conductor for imparting moisturizing effect to the polyelectrolyte film; wherein the ion conductor is dispersed on the ion exchange resin and the polymer.

IC ICM H01M0008-10

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **fuel cell** polyelectrolyte film component structure

IT **Fuel cells**
Ion exchangers
Polyelectrolytes
(components and manufacture of polyelectrolyte films for **fuel cells**)

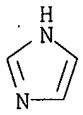
IT Polybenzimidazoles
Polyoxadiazoles
Polyquinoxalines
RL: TEM (Technical or engineered material use); USES (Uses)
(components and manufacture of polyelectrolyte films for **fuel cells**)

IT 95-16-9D, Benzothiazole, derivs., polymers **288-32-4D**, 1H-Imidazole, derivs., polymers 289-06-5D, 1,3,4-Thiadiazole, derivs., polymers **289-95-2D**, Pyrimidine, derivs., polymers **25013-01-8**, Polypyridine,
RL: TEM (Technical or engineered material use); USES (Uses)
(components and manufacture of polyelectrolyte films for **fuel cells**)

IT **288-32-4D**, 1H-Imidazole, derivs., polymers **289-95-2D**, Pyrimidine, derivs., polymers **25013-01-8**, Polypyridine,
RL: TEM (Technical or engineered material use); USES (Uses)
(components and manufacture of polyelectrolyte films for **fuel cells**)

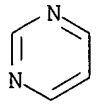
RN 288-32-4 HCAPLUS

CN 1H-Imidazole (9CI) (CA INDEX NAME)



RN 289-95-2 HCAPLUS

CN Pyrimidine (8CI, 9CI) (CA INDEX NAME)

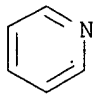


RN 25013-01-8 HCAPLUS

CN Pyridine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 110-86-1
CMF C5 H5 N

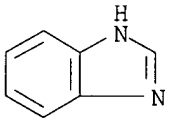


L149 ANSWER 7 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:931006 HCAPLUS
DN 141:398125
TI Dye sensitized solar cell
IN Wang, Peng; Zakeeruddin, Shaikm; Graetzel, Michael
PA Ecole Polytechnique Federale De Lausanne Epfl, Switz.
SO Eur. Pat. Appl., 18 pp.
CODEN: EPXXDW
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1473745	A1	20041103	EP 2003-405306	20030430 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	AU 2004235426	A1	20041111	AU 2004-235426	20040429 <--
	WO 2004097871	A2	20041111	WO 2004-CH262	20040429 <--
	WO 2004097871	A3	20050811		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	EP 1620869	A2	20060201	EP 2004-730173	20040429 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
	JP 2006525632	T	20061109	JP 2006-504186	20040429 <--
PRAI	EP 2003-405306	A	20030430 <--		
	WO 2004-CH262	W	20040429		

OS MARPAT 141:398125
AB In this dye-sensitized solar cell the dye is an amphiphilic Ru polypyridyl complex. The mol. structure of the stabilizing compound comprises a hydrophobic part and an anchoring group, i.e. decylphosphonic acid. This compound is co-adsorbed with the dye on a semi-conductive metal oxide layer of the photoanode.
IC ICM H01G0009-20
ICS H01L0051-20
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76
IT **Photoelectrochemical cells**

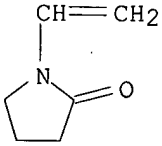
Polyelectrolytes
(dye-sensitized solar cell)
IT Carboxylic acids, uses
Fluoropolymers, uses
Polyanilines
Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(dye-sensitized solar cell)
IT **Anodes**
(photoelectrochem.; dye-sensitized solar cell)
IT **51-17-2**, 1H-Benzimidazole 81-25-4, Cholic acid 83-44-3, Deoxycholic acid 98-89-5, Cyclohexanecarboxylic acid 109-74-0, Butyronitrile 110-67-8, 3-Methoxypropionitrile 128-13-2, Ursodeoxycholic acid 434-13-9, Lithocholic acid 474-25-9, Chenodeoxycholic acid 1632-83-3, N-Methylbenzimidazole 4371-64-6, Hexadecylmalonic acid 6874-60-8, Decylphosphonic acid 7553-56-2, Iodine, uses 9002-88-4D, derivs. 9003-07-0, Polypropylene 9003-17-2, Polybutadiene **9003-39-8**, Polyvinylpyrrolidone 9003-53-6, Polystyrene 9011-14-7, Polymethyl methacrylate 9011-17-0 16269-16-2 24937-79-9, PVDF 25014-41-9, Polyacrylonitrile **25233-34-5**, **Polythiophene** 25322-68-3, Polyethylene oxide 25322-68-3D, derivs. 26009-24-5, Poly(1,4-phenylene-1,2-ethenediyl) **30604-81-0**, **Polypyrrole** 42862-38-4, Adamantane acetic acid 73152-70-2, 4-Pentylbicyclo[2,2,2]octane-1-carboxylic acid 88684-65-5 119171-18-5, 1-Methyl-3-propylimidazolium iodide 218151-78-1, 1,2-Dimethyl-3-propylimidazolium iodide 502693-09-6, Z-907
RL: DEV (Device component use); USES (Uses)
(dye-sensitized solar cell)
IT **51-17-2**, 1H-Benzimidazole **9003-39-8**, Polyvinylpyrrolidone **25233-34-5**, **Polythiophene** **30604-81-0**, **Polypyrrole**
RL: DEV (Device component use); USES (Uses)
(dye-sensitized solar cell)
RN 51-17-2 HCAPLUS
CN 1H-Benzimidazole (9CI) (CA INDEX NAME)



RN 9003-39-8 HCAPLUS
CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 88-12-0
CMF C6 H9 N O



RN 25233-34-5 HCAPLUS
CN Thiophene, homopolymer (9CI) (CA INDEX NAME)

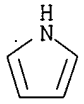
CM 1

CRN 110-02-1
CMF C4 H4 S

RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 109-97-7
CMF C4 H5 N



L149 ANSWER 8 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:905467 HCAPLUS
DN 141:382154
TI **Electrode** for **electrochemical cell**
IN **Nobuta, Tomoki**; **Kamisuki, Hiroyuki**; **Mitani, Masaya**; **Kaneko, Shinako**; Yoshinari, Tetsuya; **Nishiyama, Toshihiko**; Takahashi, Naoki
PA Japan
SO U.S. Pat. Appl. Publ., 18 pp.
CODEN: USXXCO
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004214081	A1	20041028	US 2004-827074	20040419 <--
	JP 2004342595	A	20041202	JP 2004-106720	20040331 <--
	EP 1494303	A2	20050105	EP 2004-8403	20040407 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
	KR 2004092417	A	20041103	KR 2004-26192	20040416 <--
	CN 1540780	A	20041027	CN 2004-10035118	20040423 <--
PRAI	JP 2003-121274	A	20030425 <--		

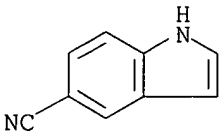
AB The present invention relates to an **electrode** for an **electrochem. cell** which comprises a **cathode** containing a **proton-conducting** compound as an **electrode** active material, an **anode** containing a **proton-conducting** compound as an **electrode** active material and an electrolyte containing a **proton** source, comprising a **proton-conducting** compound and an

anion-exchange resin. This invention can be used to improve cycle-life properties and high-speed charge/discharge properties in an **electrochem. cell.**

IC ICM H01M0004-60
INCL 429212000; 429213000
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, **72**, **76**
ST **battery electrode**; capacitor **electrode**
IT Capacitors
(double layer; **electrode** for **electrochem. cell**)
IT Anion exchangers
Battery electrodes
Capacitor electrodes
Secondary batteries
(**electrode** for **electrochem. cell**)
IT Vinal fibers
RL: DEV (Device component use); USES (Uses)
(**electrode** for **electrochem. cell**)
IT Carbon fibers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**electrode** for **electrochem. cell**)
IT **Polyquinoxalines**
RL: DEV (Device component use); USES (Uses)
(polyphenylquinoxalines; **electrode** for **electrochem. cell**)
IT **220310-61-2**, 5-Cyanoindole trimer
RL: DEV (Device component use); USES (Uses)
(**electrode** for **electrochem. cell**)
IT 12627-85-9, Dowex 1X8 52503-96-5, Diaion SA 10A 156014-64-1, Ionex TIN 200 782478-06-2, Vectron 961
RL: MOA (Modifier or additive use); USES (Uses)
(**electrode** for **electrochem. cell**)
IT **220310-61-2**, 5-Cyanoindole trimer
RL: DEV (Device component use); USES (Uses)
(**electrode** for **electrochem. cell**)
RN 220310-61-2 HCAPLUS
CN 1H-Indole-5-carbonitrile, trimer (9CI) (CA INDEX NAME)

CM 1

CRN 15861-24-2
CMF C9 H6 N2



L149 ANSWER 9 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:898688 HCAPLUS
DN 141:368427
TI **Electrochemical cell** with polymeric electrolyte
IN **Mitani, Masaya**; **Nobuta, Tomoki**; **Kamisuki, Hiroyuki**; Yoshinari, Tetsuya

PA **NEC Tokin** Corporation, Japan
SO Eur. Pat. Appl., 11 pp.
CODEN: EPXXDW
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1471592	A2	20041027	EP 2004-252182	20040414 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK, HR				
	JP 2004342593	A	20041202	JP 2004-93238	20040326 <--
	KR 2004093397	A	20041105	KR 2004-24688	20040410 <--
	TW 246222	B	20051221	TW 2004-93110343	20040414 <--
	US 2004214078	A1	20041028	US 2004-827179	20040419 <--
	CN 1610165	A	20050427	CN 2004-10035321	20040422 <--
PRAI	JP 2003-117179	A	20030422 <--		

AB This invention relates to an **electrochem. cell** comprising a **cathode** containing a **proton-conducting** compound as an **electrode** active material, an **anode** containing a **proton-conducting** compound as an **electrode** active material and an aqueous electrolytic solution containing a **proton** source as an electrolyte, wherein the electrolytic solution comprises a polymeric compound having an atom with an unpaired electron in its principal chain as an electron-transfer promoter. This invention can provide an **electrochem. cell** exhibiting improved capacity, high-speed charge/discharge properties and cycle properties.

IC ICM H01M0010-40
ICS H01M0006-16
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, **76**
ST **battery** polymeric electrolyte; capacitor polymeric electrolyte; **electrochem cell** polymeric electrolyte
IT Capacitors
(double layer; **electrochem. cell** with polymeric electrolyte)
IT **Secondary batteries**
(**electrochem. cell** with polymeric electrolyte)
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(**electrochem. cell** with polymeric electrolyte)
IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**electrochem. cell** with polymeric electrolyte)
IT **Polyquinoxalines**
RL: DEV (Device component use); USES (Uses)
(polyphenylquinoxalines; **electrochem. cell** with polymeric electrolyte)
IT 7664-93-9, Sulfuric acid, uses **9002-98-6** 25322-68-3, Polyethylene glycol 25618-55-7, Polyglycerol **220310-61-2**, 5-Cyanoindole trimer
RL: DEV (Device component use); USES (Uses)
(**electrochem. cell** with polymeric electrolyte)
IT 7440-44-0, Carbon, uses 24937-79-9, Pvdf
RL: MOA (Modifier or additive use); USES (Uses)
(**electrochem. cell** with polymeric electrolyte)
IT **9002-98-6 220310-61-2**, 5-Cyanoindole trimer
RL: DEV (Device component use); USES (Uses)
(**electrochem. cell** with polymeric electrolyte)

RN 9002-98-6 HCAPLUS
CN Aziridine, homopolymer (9CI) (CA INDEX NAME)

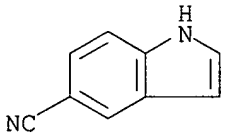
CM 1

CRN 151-56-4
CMF C2 H5 N

RN 220310-61-2 HCAPLUS
CN 1H-Indole-5-carbonitrile, trimer (9CI) (CA INDEX NAME)

CM 1

CRN 15861-24-2
CMF C9 H6 N2



L149 ANSWER 10 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:857795 HCAPLUS
DN 141:352737
TI Composite polymer electrolyte composition
IN Ogata, Naoya; Kagawa, Hiroshi; Sada, Makiko
PA Trekion Co., Ltd., Japan
SO PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DT **Patent**
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2004088671	A1	20041014	WO 2004-JP3447	20040315 <--
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
CA 2507438	A1	20041014	CA 2004-2507438	20040315 <--
EP 1612809	A1	20060104	EP 2004-720736	20040315 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, PL, SK				

US 2006057465 A1 20060316 US 2005-551330 20050929 <--
PRAI JP 2003-129589 A 20030331 <--
WO 2004-JP3447 W 20040315

AB The disclosed totally solid polymer electrolyte compns. have high ionic **conductivity** and enhanced mech. properties. This electrolyte composition is produced by polymerizing a monomer composition comprising a molten quaternary ammonium salt having a polymerizable functional group and a charge transfer ion source in the presence of a polymeric reinforcing material. The polymeric reinforcing material can be formed into a composite of polymer blend morphol. by dissolving the monomer composition and the reinforcing material in an appropriate organic solvent and polymerizing the solution
Alternatively, the composite can be obtained by impregnating a porous sheet or film as the reinforcing material with the monomer composition and effecting polymerization An electrolyte for lithium ion **battery** can be obtained by selecting a lithium salt as the charge transfer ion source; an electrolyte for **fuel cell** by selecting a **proton** donor; and an electrolyte for dye sensitized solar cell by selecting a redox ion pair. A polymer electrolyte composition not containing the
charge transfer ion source is also useful as an electrolyte for electrolytic capacitor.

IC ICM H01B0001-06
ICS H01M0008-02; H01M0014-00; H01M0010-40; C08L0101-00; H01G0009-035
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): **76**
ST triflluoromethylsulfonylimide onium salt polymer electrolyte **fuel cell**; lithium **battery** triflluoromethylsulfonylimide onium salt polymer electrolyte; capacitor triflluoromethylsulfonylimide onium salt polymer electrolyte

IT **Secondary batteries**
(lithium; preparation of composite solid polymers for)

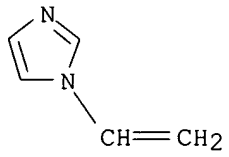
IT **Fuel cells**
(polymer electrolyte; preparation of composite solid polymers for)

IT 74-96-4, Ethylbromide 106-95-6, Allyl bromide, reactions **1072-63-5**, 1-Vinylimidazole 98402-58-5
RL: RCT (Reactant); RACT (Reactant or reagent)
(in preparation of composite polymer electrolyte)

IT 121-44-8, Triethylamine, reactions **616-47-7**, 1-Methylimidazole
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with p-chloromethylstyrene in preparation of monomers for polymer electrolyte)

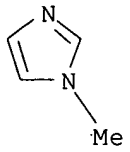
IT **1072-63-5**, 1-Vinylimidazole
RL: RCT (Reactant); RACT (Reactant or reagent)
(in preparation of composite polymer electrolyte)

RN 1072-63-5 HCAPLUS
CN 1H-Imidazole, 1-ethenyl- (9CI) (CA INDEX NAME)



IT **616-47-7**, 1-Methylimidazole
RL: RCT (Reactant); RACT (Reactant or reagent)

(reaction with p-chloromethylstyrene in preparation of monomers for polymer electrolyte)
RN 616-47-7 HCAPLUS
CN 1H-Imidazole, 1-methyl- (9CI) (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Center For Advanced Sci	2000			WO 0054351 A1	HCAPLUS
Center For Advanced Sci	2000			EP 1202365 A1	HCAPLUS
Mitsubishi Materials Co	2003			JP 200377539 A	
Nitto Denko Corp	2003			JP 200322823 A	
Shikoku Kasei Co Ltd	1998			JP 10-83821 A	HCAPLUS

L149 ANSWER 11 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:794599 HCAPLUS
DN 141:298693
TI **Electrode** and **electrochemical cell** therewith
IN **Nobuta, Tomoki; Kamisuki, Hiroyuki; Mitani, Masaya; Kaneko, Shinako;** Yoshinari, Tetsuya
PA **NEC Tokin** Corporation, Japan
SO Brit. UK Pat. Appl., 47 pp.
CODEN: BAXXDU
DT **Patent**
LA English
FAN.CNT 1

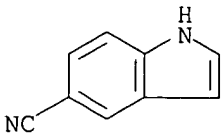
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	GB 2399938	A	20040929	GB 2004-6023	20040317 <--
	GB 2399938	B	20050406		
	JP 2004311417	A	20041104	JP 2004-68939	20040311 <--
	US 2004191607	A1	20040930	US 2004-804891	20040319 <--
	KR 2004084743	A	20041006	KR 2004-19859	20040324 <--
	CN 1534811	A	20041006	CN 2004-10031391	20040326 <--
PRAI	JP 2003-87872	A	20030327 <--		

AB An **electrode** comprises a **conductive** porous substrate of a specified porosity (e.g., woven or non-woven carbon fiber sheet), the pores of which are filled with a mixture of an electroactive material, a **conductive** auxiliary filler and optionally a binder. The electroactive material may comprise a **proton conducting** polymer e.g., π-conjugated polymers such as **polyquinoxalines**, or a π-conjugated compound such as an **indole trimer**. The **conductive** auxiliary typically comprises particulate carbon or chopped carbon fibers and the binder typically comprises polyvinylidene fluoride. To prepare the **electrode**, the electroactive material, filler and binder may be blended and then dispersed in a suitable solvent e.g., DMF. The slurry is then applied to the porous substrate using a squeegee. The **electrode** is stated to be useful for making secondary **batteries** or electrolytic double-layer capacitors.
IC ICM H01M0004-60
ICS H01G0009-155; H01M0004-62; H01M0004-96

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, **72**, **76**
ST **electrode electrochem cell**; **battery electrode**; elec double layer capacitor **electrode**
IT Capacitors
(double layer; **electrode** and **electrochem. cell** therewith)
IT **Battery electrodes**
Capacitor electrodes
Porosity
Secondary batteries
(**electrode** and **electrochem. cell** therewith)
IT Polyolefins
RL: DEV (Device component use); USES (Uses)
(**electrode** and **electrochem. cell** therewith)
IT Carbon black, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**electrode** and **electrochem. cell** therewith)
IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**electrode** and **electrochem. cell** therewith)
IT **Polyquinoxalines**
RL: DEV (Device component use); USES (Uses)
(polyphenylquinoxalines; **electrode** and **electrochem. cell** therewith)
IT Carbon fibers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(sheet; **electrode** and **electrochem. cell** therewith)
IT 7664-93-9, Sulfuric acid, uses **220310-61-2**, 5-Cyanoindole trimer
RL: DEV (Device component use); USES (Uses)
(**electrode** and **electrochem. cell** therewith)
IT 24937-79-9, Pvdf
RL: MOA (Modifier or additive use); USES (Uses)
(**electrode** and **electrochem. cell** therewith)
IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(particulates; **electrode** and **electrochem. cell** therewith)
IT **220310-61-2**, 5-Cyanoindole trimer
RL: DEV (Device component use); USES (Uses)
(**electrode** and **electrochem. cell** therewith)
RN 220310-61-2 HCAPLUS
CN 1H-Indole-5-carbonitrile, trimer (9CI) (CA INDEX NAME)

CM 1

CRN 15861-24-2
CMF C9 H6 N2



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon				JP 2002110178	HCAPLUS
Anon				US 5225296 A	HCAPLUS
Anon				US 5582937 A	HCAPLUS
Anon				JP 59146163	HCAPLUS
Anon				JP 59230257	HCAPLUS
Anon				US 6465041 B1	HCAPLUS

L149 ANSWER 12 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:611916 HCAPLUS
DN 141:126396
TI **Conducting** hybrid organic-inorganic materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**
IN Valle, Karine; Belleville, Philippe; Sanchez, Clement
PA Commissariat A L'energie Atomique, Fr.
SO Fr. Demande, 46 pp.
CODEN: FRXXBL
DT **Patent**
LA French
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	FR 2850301	A1	20040730	FR 2003-726	20030123 <--
	AU 2004207665	A1	20040812	AU 2004-207665	20040122 <--
	CA 2513700	A1	20040812	CA 2004-2513700	20040122 <--
	WO 2004067611	A1	20040812	WO 2004-FR50025	20040122 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI				
	EP 1585783	A1	20051019	EP 2004-704264	20040122 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	JP 2006519287	T	20060824	JP 2006-502167	20040122 <--
	US 2006194096	A1	20060831	US 2006-542768	20060405 <--
PRAI	FR 2003-726	A	20030123 <--		
	WO 2004-FR50025	W	20040122		

AB Hybrid organic-inorg. materials consist of two phases: (1) a first, mineral phase consisting of a structured mesoporous network with open porosity, and (2) a second phase consisting of an organic component consisting of an organic polymer, optionally containing a third phase of a surfactant within the pore interiors. The material consists of the mineral phase dispersed and intermingled within a continuous organic phase. Elec. **conducting** functional groups on the polymer portion are selected from cation-exchange groups (i.e., acid functionality, such as -SO3M, -PO3M3, -COOM, and -B(OM)2, in which M = H or a monovalent metal cation, etc.) or anion-exchange groups (i.e., heterocyclic amino, etc.). The materials are useful as **proton conducting** membranes or polymer

electrolyte membranes for fabrication of **fuel cells**.
IC ICM B01J0047-12
ICS H01M0008-10; B01J0039-08; B01J0041-08
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 49
ST elec **conductor** hybrid org inorg material; polymer mineral oxide hybrid org inorg material **conductor**; **fuel cell** **proton conducting** membrane hybrid material
IT Functional groups
(acidic groups, **conducting** electrolytes; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)
IT Quaternary ammonium compounds, uses
RL: DEV (Device component use); USES (Uses)
(alkyltrimethyl, surfactants, **conducting** polymers containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)
IT Polyelectrolytes
(amphiphilic, surfactants, **conducting** polymers containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)
IT Functional groups
(basic groups, **conducting** electrolytes; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)
IT Fluoropolymers, uses
Polyanilines
Polybenzimidazoles
Polybenzoxazoles
Polyethers, uses
Polyimides, uses
Polyolefins
Polyphenyls
Polyphosphazenes
Polysulfonamides
Polysulfones, uses
Polythiophenylenes
Polyvinyl butyrals
Silicone rubber, uses
RL: DEV (Device component use); USES (Uses)
(**conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)
IT **Fuel cell separators**
(**conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)
IT Sulfonic acids, uses
RL: DEV (Device component use); USES (Uses)
(esters, surfactants, **conducting** polymers containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)
IT Fatty acids, uses
RL: DEV (Device component use); USES (Uses)

(long-chain, surfactants, **conducting** polymers containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT **Conducting** polymers
Electric **conductors**
Hybrid organic-inorganic materials
(membranes; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Porosity
(mesoporosty, of **conducting** electrolytes; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT **Heterocyclic compounds**
RL: DEV (Device component use); USES (Uses)
(**nitrogen**, aromatic, polymers, **conducting** electrolytes; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Polyimides, uses
RL: DEV (Device component use); USES (Uses)
(polyamide-, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Polyketones
Polysulfones, uses
RL: DEV (Device component use); USES (Uses)
(polyether-, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Polyamides, uses
RL: DEV (Device component use); USES (Uses)
(polyimide-, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Polyethers, uses
RL: DEV (Device component use); USES (Uses)
(polyketone-, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT **Fuel cells**
(polymer electrolyte; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT **Heterocyclic compounds**
RL: DEV (Device component use); USES (Uses)
(polymers, aromatic **nitrogen** heterocycles, **conducting** electrolytes; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Acetals
Vinyl compounds, uses
RL: DEV (Device component use); USES (Uses)
(polymers, **conducting** electrolytes containing; **conducting**

hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Polysulfones, uses
RL: DEV (Device component use); USES (Uses)
(polyoxyphenylene-, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT **Conducting** polymers
(**polypyrroles**, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Polyethers, uses
Polyoxyphenylenes
RL: DEV (Device component use); USES (Uses)
(polysulfone-, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT **Fuel cells**
(**proton** exchange membrane; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Oxides (inorganic), uses
Rare earth oxides
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(reaction products, **conducting** electrolytes; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Anion exchangers
Cation exchangers
(reaction products, membranes; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Phospholipids, uses
RL: DEV (Device component use); USES (Uses)
(surfactants, **conducting** polymers containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Polyesters, uses
RL: DEV (Device component use); USES (Uses)
(vinyl group-containing, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT 288-42-6, Oxazole 9002-83-9, Polychlorotrifluoroethylene 9002-84-0, PTFE 9002-88-4, Polyethylene 9002-89-5, Polyvinyl alcohol 9003-05-8, Polyacrylamide 9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate 9003-27-4, Polyisobutene **9003-39-8**, Polyvinyl pyrrolidone 9003-55-8, Butadiene-styrene copolymer 9003-95-6, Polyvinyl stearate 24937-79-9, Polyvinylidene difluoride 24979-97-3, Polytetramethylene oxide 24991-32-0, Polyvinyl benzoate 24991-33-1, Polyvinyl chloroacetate 25035-84-1, Polyvinyl propionate 25038-32-8, Styrene-isoprene copolymer 25068-12-6, Ethylene-styrene copolymer 25087-26-7, Polymethacrylic acid 25120-07-4, Polyhexafluoropropene

25189-69-9, Polystyrene oxide 25190-06-1, Polytetramethylene oxide **25233-30-1, Polyaniline** 25567-89-9, Polyvinyl formate 25748-85-0, Polyvinyl trifluoroacetate 26246-91-3, Polyvinyl laurate 26715-88-8, Polyvinyl trimethylacetate 27380-27-4, PEK 30398-71-1, Polyvinyl palmitate **30604-81-0, Polypyrrole** 31694-16-3, PEEK 31762-63-7, Polyhexamethylene oxide 60015-03-4, PEEKK **105809-46-9**, Polypyrazole
RL: DEV (Device component use); USES (Uses)
(**conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT 1306-38-3DP, Cerium oxide (CeO2), reaction products 1308-96-9DP, Europium oxide, reaction products 1312-81-8DP, Lanthanum oxide (La2o3), reaction products 1314-23-4DP, Zirconium dioxide, reaction products 1314-61-0DP, Tantalum oxide, reaction products 1332-29-2DP, Tin oxide, reaction products 1344-28-1DP, Aluminum oxide, reaction products 7631-86-9DP, Silicon dioxide, reaction products 12055-23-1DP, Hafnium oxide (HfO2), reaction products 12064-62-9DP, Gadolinium oxide (Gd2O3), reaction products 13463-67-7DP, Titanium dioxide, reaction products
RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(**conducting** electrolytes; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

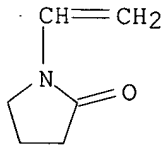
IT 110-16-7, Maleic acid, uses 2743-38-6 7664-38-2D, Phosphoric acid, alkyl esters
RL: DEV (Device component use); USES (Uses)
(surfactants, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton -conducting** and polymer-electrolyte membranes in **fuel cells**)

IT **9003-39-8**, Polyvinyl pyrrolidone **25233-30-1, Polyaniline 30604-81-0, Polypyrrole 105809-46-9**, Polypyrazole
RL: DEV (Device component use); USES (Uses)
(**conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

RN 9003-39-8 HCAPLUS
CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 88-12-0
CMF C6 H9 N O

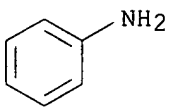


RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 62-53-3

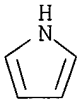
CMF C6 H7 N



RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

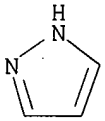
CRN 109-97-7
CMF C4 H5 N



RN 105809-46-9 HCAPLUS
CN 1H-Pyrazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 288-13-1
CMF C3 H4 N2



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	2003	2003		PATENT ABSTRACTS OF	
Bauer, B	2002			WO 0205370 A	HCAPLUS
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Commissariat Energie At	1992			WO 9206775 A	HCAPLUS
Jeffrey, B	2001			US 6270846 B1	
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Univ California	2002			WO 0241043 A	HCAPLUS
Univ Schiller Jena	1994			DE 4225952 A	HCAPLUS

L149 ANSWER 13 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:611915 HCAPLUS
DN 141:126395
TI **Conducting** hybrid organic-inorganic materials, especially as **proton-conducting** and polymer-electrolyte membranes in

fuel cells
IN Valle, Karine; Belleville, Philippe; Sanchez, Clement
PA Commissariat A L'energie Atomique, Fr.
SO Fr. Demande, 45 pp.
CODEN: FRXXBL
DT **Patent**
LA French
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	FR 2850300	A1	20040730	FR 2003-724	20030123 <--
	FR 2850300	B1	20060602		
	AU 2004207666	A1	20040812	AU 2004-207666	20040122 <--
	CA 2513817	A1	20040812	CA 2004-2513817	20040122 <--
	WO 2004067640	A2	20040812	WO 2004-FR50026	20040122 <--
	WO 2004067640	A3	20040910		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI				
	EP 1587876	A2	20051026	EP 2004-704265	20040122 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	JP 2006518405	T	20060810	JP 2006-502168	20040122 <--
	US 2006182942	A1	20060817	US 2005-542813	20050720
PRAI	FR 2003-724	A	20030123 <--		
	WO 2004-FR50026	W	20040122		

AB Elec. **conducting** hybrid organic-inorg. materials consist of a mineral (inorg.) phase, which form a structured mesoporous network with open porosity. The material consists of oligomers, such as an organic polymer, integrated into the walls (the outer surfaces) and are covalently bonded to the mineral phase, with a possible second phase inside the pores. Further, the materials contain at least a surfactant; at least one of the mineral phases and the oligomers (or organic polymers) present elec. **conductive** or hydrophilic functions on the pore surfaces. Elec. **conducting** functional groups on the polymer portion are selected from cation-exchange groups (i.e., acid functionality, such as -SO3M, -PO3M3, -COOM, and -B(OM)2, in which M = H or a monovalent metal cation, etc.) or anion-exchange groups (i.e., heterocyclic amino, etc.). The materials are useful as **proton conducting** membranes or polymer electrolyte membranes for fabrication of **fuel cells**.
IC ICM B01J0047-12
ICS H01M0008-10; B01J0039-08; B01J0041-08
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 49
ST elec **conductor** hybrid org inorg material; polymer mineral oxide hybrid org inorg material **conductor**; **fuel cell proton conducting** membrane hybrid material
IT Functional groups
(acidic groups, **conducting** electrolytes; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)
IT Quaternary ammonium compounds, uses
RL: DEV (Device component use); USES (Uses)
(alkyltrimethyl, surfactants, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel**

cells)
IT Polyelectrolytes
(amphiphilic, surfactants, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton -conducting** and polymer-electrolyte membranes in **fuel cells**)
IT Functional groups
(basic groups, **conducting** electrolytes; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)
IT Fluoropolymers, uses
Polyanilines
Polybenzimidazoles
Polybenzoxazoles
Polyethers, uses
Polyimides, uses
Polyolefins
Polyphenyls
Polyphosphazenes
Polysulfonamides
Polysulfones, uses
Polythiophenylenes
Polyvinyl butyrals
Silicone rubber, uses
RL: DEV (Device component use); USES (Uses)
(**conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)
IT **Fuel cell separators**
(**conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)
IT Sulfonic acids, uses
RL: DEV (Device component use); USES (Uses)
(esters, surfactants, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton -conducting** and polymer-electrolyte membranes in **fuel cells**)
IT Fatty acids, uses
RL: DEV (Device component use); USES (Uses)
(long-chain, surfactants, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton -conducting** and polymer-electrolyte membranes in **fuel cells**)
IT **Conducting** polymers
Electric **conductors**
Hybrid organic-inorganic materials
(membranes; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)
IT Porosity
(mesoporosity, of **conducting** electrolytes; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)
IT **Heterocyclic compounds**
RL: DEV (Device component use); USES (Uses)
(**nitrogen**, aromatic, polymers, **conducting** electrolytes; **conducting** hybrid organic-inorg. materials, especially

as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Polyimides, uses
RL: DEV (Device component use); USES (Uses)
(polyamide-, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton -conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Polyketones
Polysulfones, uses
RL: DEV (Device component use); USES (Uses)
(polyether-, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton -conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Polyamides, uses
RL: DEV (Device component use); USES (Uses)
(polyimide-, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton -conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Polyethers, uses
RL: DEV (Device component use); USES (Uses)
(polyketone-, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton -conducting** and polymer-electrolyte membranes in **fuel cells**)

IT **Fuel cells**
(polymer electrolyte; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT **Heterocyclic compounds**
RL: DEV (Device component use); USES (Uses)
(polymers, aromatic **nitrogen** heterocycles, **conducting** electrolytes; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Acetals
Vinyl compounds, uses
RL: DEV (Device component use); USES (Uses)
(polymers, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Polysulfones, uses
RL: DEV (Device component use); USES (Uses)
(polyoxyphenylene-, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton -conducting** and polymer-electrolyte membranes in **fuel cells**)

IT **Conducting** polymers
(**polypyrroles**, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton -conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Polyethers, uses
Polyoxyphenylenes
RL: DEV (Device component use); USES (Uses)
(polysulfone-, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton**

-**conducting** and polymer-electrolyte membranes in **fuel cells**)

IT **Fuel cells**
(**proton** exchange membrane; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Oxides (inorganic), uses
Rare earth oxides
RL: DEV (Device component use); USES (Uses)
(reaction products, **conducting** electrolytes; **conducting** hybrid organic-inorg. materials, especially as **proton -conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Anion exchangers
Cation exchangers
(reaction products, membranes; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Phospholipids, uses
RL: DEV (Device component use); USES (Uses)
(surfactants, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton -conducting** and polymer-electrolyte membranes in **fuel cells**)

IT Polyesters, uses
RL: DEV (Device component use); USES (Uses)
(vinyl group-containing, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton -conducting** and polymer-electrolyte membranes in **fuel cells**)

IT 288-42-6D, Oxazole, polymers 9002-83-9, Polychlorotrifluoroethylene 9002-84-0, PTFE 9002-88-4, Polyethylene 9002-89-5, Polyvinyl alcohol 9003-05-8, Polyacrylamide 9003-07-0, Polypropylene 9003-20-7, Polyvinyl acetate 9003-27-4, Polyisobutylene **9003-39-8**, Polyvinyl pyrrolidone **9003-47-8**, Polyvinyl pyridine 9003-55-8, Butadiene-styrene copolymer 9003-95-6, Polyvinyl stearate 24937-79-9, Polyvinylidene difluoride 24979-97-3, Polytetramethylene oxide 24991-32-0, Polyvinyl benzoate 24991-33-1, Polyvinyl chloroacetate 25035-84-1, Polyvinyl propionate 25038-32-8, Styrene-isoprene copolymer 25068-12-6 25087-26-7, Poly(methacrylic acid) 25120-07-4, Polyhexafluoropropene 25189-69-9, Poly(styrene oxide) 25190-06-1, Polytetramethylene oxide **25233-30-1**, **Polyaniline** 25567-89-9, Polyvinyl formate 25748-85-0, Polyvinyl trifluoroacetate 25821-66-3, Polyvinyl trichloroacetate 26246-91-3, Polyvinyl laurate 26715-88-8, Polyvinyl trimethylacetate 27380-27-4, Pek 30398-71-1, Polyvinyl palmitate **30604-81-0**, **Polypyrrole** 31694-16-3, Peek 31762-63-7, Polyhexamethylene oxide 60015-03-4, Peekk **105809-46-9**, Polypyrazole
RL: DEV (Device component use); USES (Uses)
(**conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT 1306-38-3DP, Cerium oxide, reaction products 1308-96-9DP, Europium oxide, reaction products 1312-81-8DP, Lanthanum oxide, reaction products 1314-23-4DP, Zirconium dioxide, reaction products 1314-61-0DP, Tantalum oxide, reaction products 1332-29-2DP, Tin oxide, reaction products 1344-28-1DP, Aluminum oxide, reaction products 7631-86-9DP, Silicon dioxide, reaction products 12055-23-1DP, Hafnium oxide, reaction products 12064-62-9DP, Gadolinium oxide, reaction products 13463-67-7DP, Titanium dioxide, reaction products

RL: DEV (Device component use); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(**conducting** electrolytes; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

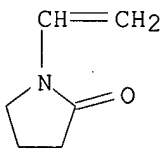
IT 110-16-7, Maleic acid, uses 2743-38-6 7664-38-2D, Phosphoric acid, alkyl esters
RL: DEV (Device component use); USES (Uses)
(surfactants, **conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

IT **9003-39-8**, Polyvinyl pyrrolidone **9003-47-8**, Polyvinyl pyridine **25233-30-1**, **Polyaniline 30604-81-0**, **Polypyrrole 105809-46-9**, Polypyrazole
RL: DEV (Device component use); USES (Uses)
(**conducting** electrolytes containing; **conducting** hybrid organic-inorg. materials, especially as **proton-conducting** and polymer-electrolyte membranes in **fuel cells**)

RN 9003-39-8 HCAPLUS
CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 88-12-0
CMF C6 H9 N O



RN 9003-47-8 HCAPLUS
CN Pyridine, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

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CRN 1337-81-1
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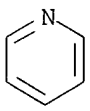
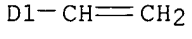
CCI IDS

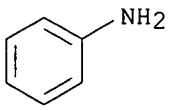




RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

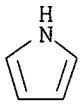
CRN 62-53-3
CMF C6 H7 N



RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

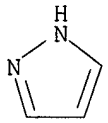
CRN 109-97-7
CMF C4 H5 N



RN 105809-46-9 HCAPLUS
CN 1H-Pyrazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 288-13-1
CMF C3 H4 N2



RETABLE

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Fuma Tech Gmbh	2002			FR 2811323 A	HCAPLUS
Johnson Matthey Plc	1998			EP 0875524 A	HCAPLUS
Laconti, A	1992		298	PROCEEDINGS OF THE I	HCAPLUS

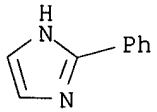
L149 ANSWER 14 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:609793 HCAPLUS
DN 141:159845
TI Method of preparation of **proton** electrolyte membranes for **fuel cells**
IN Li, Siwen; Liu, Meilin
PA USA
SO U.S. Pat. Appl. Publ., 20 pp.
CODEN: USXXCO
DT **Patent**

LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004146766	A1	20040729	US 2004-757661	20040114 <--
PRAI	US 2003-439985P	P	20030114 <--		

AB Flexible **proton** electrolyte membranes, **fuel cells**, and methods for making membranes are disclosed. One exemplary membrane, among others, includes a flexible **proton** electrolyte membrane having the characteristic of a **proton conductivity** of about 1+10-6 to 1+10-1 S/cm at 30-180° and a relative humidity of 0-100%.

IC ICM H01M0008-10
ICS C08J0005-22
INCL 429030000; 521027000; 429033000
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **fuel cell proton** electrolyte membrane prepn
IT **Fuel cell electrolytes**
(method of preparation of **proton** electrolyte membranes for **fuel cells**)
IT **Fuel cells**
(**proton** exchange membrane; method of preparation of **proton** electrolyte membranes for **fuel cells**)
IT **Ionic conductivity**
(**proton**; method of preparation of **proton** electrolyte membranes for **fuel cells**)
IT 78-10-4DP, Tetraethoxysilane, polymers, phosphate esters **670-96-2DP**, 2-Phenylimidazole, salts with sulfonated polymer phosphate esters 780-69-8DP, Phenyltriethoxysilane, sulfonated, polymers, phosphate esters 2530-83-8DP, γ-Glycidoxypropyltrimethoxysilane, polymers, phosphate esters 52217-60-4P 75009-88-0DP, polymers, phosphate esters
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(membranes; method of preparation of **proton** electrolyte membranes for **fuel cells**)
IT **670-96-2DP**, 2-Phenylimidazole, salts with sulfonated polymer phosphate esters
RL: IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(membranes; method of preparation of **proton** electrolyte membranes for **fuel cells**)
RN 670-96-2 HCAPLUS
CN 1H-Imidazole, 2-phenyl- (9CI) (CA INDEX NAME)



L149 ANSWER 15 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:605443 HCAPLUS
DN 141:143194
TI Method of fabrication of membrane **electrode** unit for polymer electrolyte **fuel cells**

IN Melzner, Dieter; Reiche, Annette; Maehr, Ulrich; Kiel, Suzana
PA Sartorius Ag, Germany
SO Ger. Offen., 12 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10301810	A1	20040729	DE 2003-10301810	20030120 <--
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	JP 2006513544	T	20060420	JP 2004-566800	20031219 <--
	EP 1722435	A1	20061115	EP 2006-12104	20031219 <--
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	DE 202004000365	U1	20040422	DE 2004-202004000365	20040113 <--
PRAI	DE 2003-10301810	A	20030120 <--		
	EP 2003-815370	A3	20031219		
	WO 2003-EP14623	W	20031219		

AB The invention concerns a membrane-**electrode** unit and polymer electrolyte **fuel cell** using the same for operating temperature ≤250°, as well as method of fabrication of the membrane. Membrane-**electrode** units of the polymer electrolyte **fuel cells** consist ≥2 laminar gas distribution **electrodes** and a sandwich-like polymer membrane (provided between the **electrodes**) with at least a basic polymer as well as a dopant, with which the gas distribution **electrodes** are in such a manner loaded that they represent a dopant reservoir for the polymer membrane, whereby the polymer membrane is **proton-conductively** and firmly tied up to the gas distribution **electrodes** over the dopant after the effect of pressure and temperature In the doped condition, it shows a **conductivity** of at least 0.1 S/m at a temperature of <25°. The invention is applicable directly for stationary and mobile power generation from chemical energy.

IC ICM H01M0008-02
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST membrane **electrode** unit fabrication polymer electrolyte **fuel cell**
IT Membranes, nonbiological
(method of fabrication of membrane **electrode** unit for polymer electrolyte **fuel cells**)
IT Epoxides

Isocyanates
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(method of fabrication of membrane **electrode** unit for polymer electrolyte **fuel cells**)

IT Polybenzimidazoles
Polybenzothiazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: DEV (Device component use); USES (Uses)
(method of fabrication of membrane **electrode** unit for polymer electrolyte **fuel cells**)

IT **Fuel cells**
(polymer electrolyte; method of fabrication of membrane **electrode** unit for polymer electrolyte **fuel cells**)

IT 2425-79-8, 1,4-Butanedioldiglycidyl ether
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(method of fabrication of membrane **electrode** unit for polymer electrolyte **fuel cells**)

IT 129-00-0D, Pyrene, tetraaza derivs., polymers 298-07-7, Bis(2-ethylhexyl) phosphate 838-85-7, Diphenylphosphate **25013-01-8**, Polypyridine **82370-43-2**, Polyimidazole **128611-69-8**, 1,3,4-Thiadiazole homopolymer **190201-51-5**, Pyrimidine, homopolymer
RL: DEV (Device component use); USES (Uses)
(method of fabrication of membrane **electrode** unit for polymer electrolyte **fuel cells**)

IT 7664-38-2, Phosphoric acid, uses
RL: MOA (Modifier or additive use); USES (Uses)
(method of fabrication of membrane **electrode** unit for polymer electrolyte **fuel cells**)

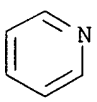
IT 127-19-5, Dimethylacetamide
RL: TEM (Technical or engineered material use); USES (Uses)
(method of fabrication of membrane **electrode** unit for polymer electrolyte **fuel cells**)

IT **25013-01-8**, Polypyridine **82370-43-2**, Polyimidazole **128611-69-8**, 1,3,4-Thiadiazole homopolymer **190201-51-5**, Pyrimidine, homopolymer
RL: DEV (Device component use); USES (Uses)
(method of fabrication of membrane **electrode** unit for polymer electrolyte **fuel cells**)

RN 25013-01-8 HCAPLUS
CN Pyridine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 110-86-1
CMF C5 H5 N

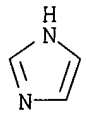


RN 82370-43-2 HCAPLUS

CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

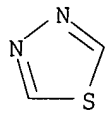
CRN 288-32-4
CMF C3 H4 N2



RN 128611-69-8 HCAPLUS
CN 1,3,4-Thiadiazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

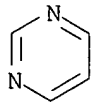
CRN 289-06-5
CMF C2 H2 N2 S



RN 190201-51-5 HCAPLUS
CN Pyrimidine, homopolymer (9CI) (CA INDEX NAME)

CM 1

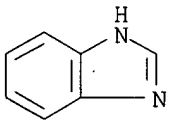
CRN 289-95-2
CMF C4 H4 N2



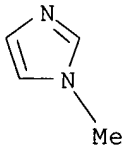
L149 ANSWER 16 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:530346 HCAPLUS
DN 141:91777
TI Anhydrous **proton-conductive** membrane and **fuel cell** using the membrane
IN Honma, Itaru
PA National Institute of Advanced Industrial Science and Technology, Japan
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2004185891	A	20040702	JP 2002-349503	20021202 <--

PRAI JP 2002-349503 20021202 <--
AB The membrane is a polymer electrolyte membrane, containing an acidic polymer and/or a basic mol. in its membrane; where the membrane has an ion conductivity of 1 + 10-5 s/cm at -30-250° under water-free or humidity-free conditions. The **fuel cell** uses the above membrane as an electrolyte membrane.
IC ICM H01M0008-02
ICS C08J0005-22; C08K0005-00; C08K0007-02; C08L0101-00; H01B0001-06; H01M0008-10
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST **fuel cell** polymer electrolyte anhyd **proton** conducive membrane; electrolyte membrane acidic polymer basic mol **fuel cell**
IT **Fuel cell electrolytes**
Fuel cells
(anhydrous **proton-conductive** membranes containing acidic polymers and/or basic mol. with controlled ion **conductivity** for **fuel cell** electrolytes)
IT **51-17-2**, Benzimidazole **616-47-7**, 1-Methyl imidazole 2627-35-2, Monododecyl phosphate 27754-99-0, Polyvinyl phosphonate
RL: TEM (Technical or engineered material use); USES (Uses)
(anhydrous **proton-conductive** membranes containing acidic polymers and/or basic mol. with controlled ion **conductivity** for **fuel cell** electrolytes)
IT **51-17-2**, Benzimidazole **616-47-7**, 1-Methyl imidazole
RL: TEM (Technical or engineered material use); USES (Uses)
(anhydrous **proton-conductive** membranes containing acidic polymers and/or basic mol. with controlled ion **conductivity** for **fuel cell** electrolytes)
RN 51-17-2 HCAPLUS
CN 1H-Benzimidazole (9CI) (CA INDEX NAME)



RN 616-47-7 HCAPLUS
CN 1H-Imidazole, 1-methyl- (9CI) (CA INDEX NAME)



L149 ANSWER 17 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:451532 HCAPLUS
DN 141:26109
TI **Proton** exchange membrane for **fuel cell**
IN Wixom, Michael; Lei, Hanwei; Zhang, Pu; Ma, Junqing
PA T/J Technologies, Inc., USA
SO U.S. Pat. Appl. Publ., 7 pp.

CODEN: USXXCO
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004106030	A1	20040603	US 2003-719582	20031121 <--
	US 6878475	B2	20050412		
	WO 2004049469	A2	20040610	WO 2003-US37521	20031124 <--
	WO 2004049469	A3	20040910		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2003295870	A1	20040618	AU 2003-295870	20031124 <--
PRAI	US 2002-428542P	P	20021122	<--	
	US 2003-719582	A	20031121		
	WO 2003-US37521	W	20031124		

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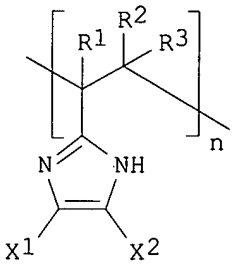
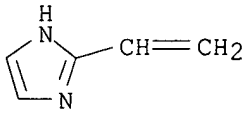


I

AB A **proton** exchange membrane for a **fuel cell** is prepared from a polyimidazole polymer having the formula (I) wherein R1-R3 are independently H, a halogen, an alkyl or a substituted alkyl; X1 and X2 are independently or an electron withdrawing group such as CN. The membrane may be doped to alter its **conductivity** The membrane may be prepared from a copolymer of the polyimidazole. Also disclosed is a **fuel cell** incorporating the membrane.

IC ICM H01M0008-10
INCL 429033000
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **fuel cell proton** exchange membrane vinylimidazole polymer
IT Polyphosphoric acids
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; **proton** exchange membrane for **fuel cell**)
IT Acids, uses
RL: MOA (Modifier or additive use); USES (Uses)
(inorg., dopant; **proton** exchange membrane for **fuel**

cell)
IT Electric **conductivity**
(**proton** exchange membrane for **fuel cell**)
IT Heteropoly acids
RL: MOA (Modifier or additive use); USES (Uses)
(**proton** exchange membrane for **fuel cell**)
IT **Fuel cells**
(solid electrolyte; **proton** exchange membrane for **fuel cell**)
IT 7664-38-2, Phosphoric acid, uses 7664-93-9, Sulfuric acid, uses 7697-37-2, Nitric acid, uses
RL: MOA (Modifier or additive use); USES (Uses)
(dopant; **proton** exchange membrane for **fuel cell**)
IT 67-68-5, Dmso, uses 68-12-2, Dmf, uses 872-50-4, N-Methylpyrrolidone, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polar solvent; **proton** exchange membrane for **fuel cell**)
IT 1184-84-5D, Vinylsulfonic acid, polymers with vinylimidazole derivs. 1746-03-8D, Vinylphosphonic acid, polymers with vinylimidazole derivs. 7440-21-3D, Silicon, compound 26914-43-2D, Styrenesulfonic acid, polymers with vinylimidazole derivs. **43129-93-7D**, 2-Vinylimidazole, derivs., polymers with vinyl group-containing acids
RL: DEV (Device component use); USES (Uses)
(**proton** exchange membrane for **fuel cell**)
IT 1343-93-7, Phosphotungstic acid 2627-35-2, Monododecylphosphate 12026-57-2, Phosphomolybdic acid 12027-38-2, Silicotungstic acid
RL: MOA (Modifier or additive use); USES (Uses)
(**proton** exchange membrane for **fuel cell**)
IT 7631-86-9, Silica, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**proton** exchange membrane for **fuel cell**)
IT **43129-93-7D**, 2-Vinylimidazole, derivs., polymers with vinyl group-containing acids
RL: DEV (Device component use); USES (Uses)
(**proton** exchange membrane for **fuel cell**)
RN 43129-93-7 HCAPLUS
CN 1H-Imidazole, 2-ethenyl- (9CI) (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1999			WO 9952956	HCAPLUS
Anon	2001			WO 0151532 A1	HCAPLUS
Boom	1972			US 3699038 A	HCAPLUS
Boom	1973			US 3737042 A	HCAPLUS
Brinegar	1973			US 3720607 A	HCAPLUS
Brinegar	1974			US 3841492 A	HCAPLUS
Fujishima	2003			US 6624470 B1	HCAPLUS
Ram	1974			US 3851025 A	HCAPLUS
Rasmussen	1998			US 5712408 A	HCAPLUS

Rasmussen	2000		US 6096899 A	HCAPLUS
Rasmussen	2001		US 6274724 B1	
Rasmussen	2002		US 20020028952 A1	
Rasmussen	2002		US 6384068 B1	HCAPLUS
Rasmussen	2002		US 6482954 B1	HCAPLUS
Rasmussen et al..	2001		US 20010053823 A1	
Sakaguchi	2004		US 20040062969 A1	
Savinell	1996		US 5525436 A	HCAPLUS

L149 ANSWER 18 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:433703 HCAPLUS
DN 141:9611
TI Enzyme immobilization for use in biofuel cells and sensors
IN Minteer, Shelley D.; Akers, Niki L.; Moore, Christine M.
PA St. Louis University, USA
SO U.S. Pat. Appl. Publ., 33 pp., which
CODEN: USXXCO
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004101741	A1	20040527	US 2003-617452	20030711 <--
	CA 2507455	A1	20040617	CA 2003-2507455	20031121 <--
	WO 2004051774	A2	20040617	WO 2003-US37336	20031121 <--
	WO 2004051774	A3	20041125		
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2003297552	A1	20040623	AU 2003-297552	20031121 <--
	EP 1565957	A2	20050824	EP 2003-812443	20031121 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	JP 2006508519	T	20060309	JP 2004-570766	20031121 <--
PRAI	US 2002-429829P	P	20021127	<--	
	US 2003-486076P	P	20030710		
	US 2003-617452	A	20030711		
	WO 2003-US37336	W	20031121		

OS MARPAT 141:9611
AB Disclosed are bioanodes comprising a quaternary ammonium treated Nafion polymer membrane and a dehydrogenase incorporated within the treated Nafion polymer. The dehydrogenase catalyzes the oxidation of an organic fuel and reduces an adenine dinucleotide. The ion conducting polymer membrane lies juxtaposed to a polymethylene green redox polymer membrane, which serves to electro-oxidize the reduced adenine dinucleotide. The bioanode is used in a **fuel cell** to produce high power densities.
IC ICM H01M0004-90
ICS H01M0004-96; H01M0008-10; C12N0011-08
INCL 429043000; 429044000; 429042000; 429030000; 429013000; 435180000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 7, 38
ST enzyme immobilization biofuel cell sensor; **fuel cell**

biochem enzyme immobilization

IT **Fuel cell cathodes**
(biocathode; enzyme immobilization for use in biofuel cells and sensors)

IT **Fuel cells**
(biochem. **fuel cells**; enzyme immobilization for use in biofuel cells and sensors)

IT **Polyanilines**
Quinones
RL: CAT (Catalyst use); USES (Uses)
(enzyme immobilization for use in biofuel cells and sensors)

IT 61-73-4, Methylene blue 92-31-9, Toluidine blue o 92-82-0D, Phenazine, derivs. 92-84-2, Phenothiazine 98-86-2, Acetophenone, uses 135-67-1, Phenoxazine 139-85-5, 3,4-Dihydroxybenzaldehyde 521-31-3, Luminol 531-53-3, Azure A 531-55-5, Azure B 553-24-2, Neutral red 2381-85-3, Nile blue 2679-01-8, Methylene green 3625-57-8, Nile blue A 7440-04-2D, Osmium, phenanthrolinedione 9003-01-4, Polyacrylic acid **25013-01-8**, Polypyridine **25233-30-1**, **Polyaniline** **25233-34-5**, **Polythiophene** 25265-76-3, Diaminobenzene 27318-90-7, 1,10-Phenanthroline-5,6-dione **30604-81-0**, **Polypyrrole** 37251-80-2, Toluidine blue 38096-29-6, Diaminopyridine 51878-01-4 54258-43-4, 1,10-Phenanthroline-5,6-diol 68455-94-7D, Nitrofluorenone, derivs. 74485-93-1, Poly(difluoroacetylene) 86090-24-6, Brilliant cresyl blue 87257-37-2, Polythionine 103737-36-6, Toluene blue 104934-50-1, Poly(3-hexylthiophene) 126213-51-2, Poly(3,4-ethylenedioxythiophene) 142189-51-3, Poly(thieno[3,4-b]thiophene 150645-85-5, Poly(neutral red) 150645-86-6, Poly(methylene blue) 153312-51-7, Poly(3-(4-fluorophenyl)thiophene 161201-31-6 193265-88-2, Phenothiazin-5-ium, 3-(dimethylamino)-7-(methylamino)-, chloride homopolymer **259737-85-4**, Poly(3,4-ethylenedioxypyrrole) 308284-47-1, Benzo[a]phenoxazin-7-ium, 5-amino-9-(diethylamino)-, sulfate (2:1) homopolymer 692776-93-5
RL: CAT (Catalyst use); USES (Uses)
(enzyme immobilization for use in biofuel cells and sensors)

IT 1643-19-2, Tetrabutylammonium bromide **25036-53-7**, Kapton **25232-42-2**, Poly(N-vinylimidazole)
RL: DEV (Device component use); USES (Uses)
(enzyme immobilization for use in biofuel cells and sensors)

IT **25013-01-8**, Polypyridine **25233-30-1**, **Polyaniline** **25233-34-5**, **Polythiophene** **30604-81-0**, **Polypyrrole** **259737-85-4**, Poly(3,4-ethylenedioxypyrrole)
RL: CAT (Catalyst use); USES (Uses)
(enzyme immobilization for use in biofuel cells and sensors)

RN 25013-01-8 HCAPLUS
CN Pyridine, homopolymer (9CI) (CA INDEX NAME)

CM 1

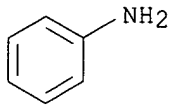
CRN 110-86-1
CMF C5 H5 N

RN 25233-30-1 HCAPLUS

CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 62-53-3
CMF C6 H7 N



RN 25233-34-5 HCAPLUS
CN Thiophene, homopolymer (9CI) (CA INDEX NAME)

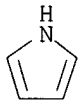
CM 1

CRN 110-02-1
CMF C4 H4 S

RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

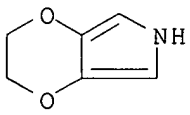
CRN 109-97-7
CMF C4 H5 N



RN 259737-85-4 HCAPLUS
CN 6H-1,4-Dioxino[2,3-c]pyrrole, 2,3-dihydro-, homopolymer (9CI) (CA INDEX NAME)

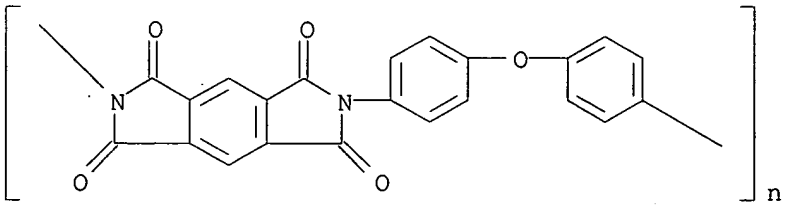
CM 1

CRN 169616-17-5
CMF C6 H7 N O2



IT **25036-53-7**, Kapton **25232-42-2**, Poly(N-vinylimidazole)

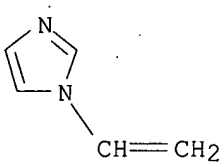
RL: DEV (Device component use); USES (Uses)
(enzyme immobilization for use in biofuel cells and sensors)
RN 25036-53-7 HCAPLUS
CN Poly[(5,7-dihydro-1,3,5,7-tetraoxobenzo[1,2-c:4,5-c']dipyrrole-2,6(1H,3H)-diyl)-1,4-phenyleneoxy-1,4-phenylene] (9CI) (CA INDEX NAME)



RN 25232-42-2 HCAPLUS
CN 1H-Imidazole, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1072-63-5
CMF C5 H6 N2



L149 ANSWER 19 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:405622 HCAPLUS
DN 140:393384
TI Procedure for the fabrication of a lithium secondary **battery** with a **cathode** active material containing lithium cobalt oxide as Li intercalating heavy metal oxide
IN Naarmann, Herbert; Kruger, Franz Josef; Theuerkauf, Stefan
PA Gaia Akkumulatorenwerke G.m.b.H., Germany; Dilo Trading AG
SO Ger. Offen., 6 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI DE 10250747	A1	20040519	DE 2002-10250747	20021031 <--
DE 10250747	B4	20050217		
PRAI DE 2002-10250747		20021031 <--		

AB A **cathode** active material contains Co-Li oxide, a polymer binder, a poly(vinyl) compound and an aprotic solvent; an **anode** active mass contains a Li-intercalating carbon, a polymer binder, a poly(vinyl) compound, and an aprotic solvent; and a separator is placed between the **anode** and the **cathode**. According to the invention, this **battery** system is fabricated economically with a **cathode**, which is a mixture of Li cobalt oxide with other Li intercalating metal oxides, whereby the necessary quantity of conducting

salts for the entire **battery** system is brought in over the separator as intermediate layer.

IC ICM H01M0010-38
ICS H01M0010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST lithium secondary **battery** fabrication process

IT Styrene-butadiene rubber, uses
RL: DEV (Device component use); USES (Uses)
(block, triblock; procedure for fabrication of lithium secondary **battery** with **cathode** active material containing lithium cobalt oxide as Li intercalating heavy metal oxide)

IT **Secondary batteries**
(lithium; procedure for fabrication of lithium secondary **battery** with **cathode** active material containing lithium cobalt oxide as Li intercalating heavy metal oxide)

IT **Battery anodes**
Battery cathodes
(procedure for fabrication of lithium secondary **battery** with **cathode** active material containing lithium cobalt oxide as Li intercalating heavy metal oxide)

IT Carbon black, uses
Chromates
Fluoro rubber
Isoprene-styrene rubber
Molybdates
Polyanilines
Polyolefins
Titanates
RL: MOA (Modifier or additive use); USES (Uses)
(procedure for fabrication of lithium secondary **battery** with **cathode** active material containing lithium cobalt oxide as Li intercalating heavy metal oxide)

IT Group VIB element compounds
RL: MOA (Modifier or additive use); USES (Uses)
(tungstates; procedure for fabrication of lithium secondary **battery** with **cathode** active material containing lithium cobalt oxide as Li intercalating heavy metal oxide)

IT 25038-32-8
RL: MOA (Modifier or additive use); USES (Uses)
(isoprene-styrene rubber, procedure for fabrication of lithium secondary **battery** with **cathode** active material containing lithium cobalt oxide as Li intercalating heavy metal oxide)

IT 7440-22-4, Silver, uses 7440-32-6, Titanium, uses
RL: MOA (Modifier or additive use); USES (Uses)
(powder; procedure for fabrication of lithium secondary **battery** with **cathode** active material containing lithium cobalt oxide as Li intercalating heavy metal oxide)

IT 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 12190-79-3, Cobalt lithium oxide colio2 21324-40-3, Lithium hexafluorophosphate 52627-24-4, Cobalt lithium oxide 90076-65-6, Lithium triflimide 244761-29-3, Lithium bis(oxalato) borate
RL: DEV (Device component use); USES (Uses)
(procedure for fabrication of lithium secondary **battery** with **cathode** active material containing lithium cobalt oxide as Li intercalating heavy metal oxide)

IT 1305-78-8, Calcia, uses 1309-48-4, Magnesium oxide (MgO), uses 1344-28-1, Alumina, uses 7782-42-5, Graphite, uses **9003-39-8**, Polyvinylpyrrolidone **9003-47-8**, Polyvinylpyridine 9011-17-0, Kynar 2801 **25232-42-2**, Polyvinylimidazole **25233-30-1**,

Polyaniline 30604-81-0, Polypyrrole
39300-70-4, Lithium nickel oxide 39457-42-6, Lithium manganese oxide
49717-97-7D, 2-Propenoic acid, 2-methyl-, ion(1-) homopolymer, C4-20 alc. derivs
RL: MOA (Modifier or additive use); USES (Uses)
(procedure for fabrication of lithium secondary **battery** with **cathode** active material containing lithium cobalt oxide as Li intercalating heavy metal oxide)

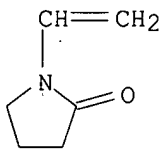
IT 106107-54-4 694491-73-1
RL: DEV (Device component use); USES (Uses)
(styrene-butadiene rubber, block, triblock; procedure for fabrication of lithium secondary **battery** with **cathode** active material containing lithium cobalt oxide as Li intercalating heavy metal oxide)

IT **9003-39-8**, Polyvinylpyrrolidone **9003-47-8**, Polyvinylpyridine **25232-42-2**, Polyvinylimidazole **25233-30-1**, **Polyaniline 30604-81-0**, **Polypyrrole**
RL: MOA (Modifier or additive use); USES (Uses)
(procedure for fabrication of lithium secondary **battery** with **cathode** active material containing lithium cobalt oxide as Li intercalating heavy metal oxide)

RN 9003-39-8 HCAPLUS
CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

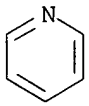
CRN 88-12-0
CMF C6 H9 N O

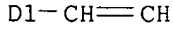


RN 9003-47-8 HCAPLUS
CN Pyridine, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1337-81-1
CMF C7 H7 N
CCI IDS

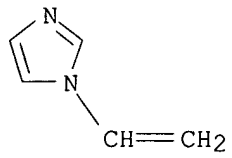




RN 25232-42-2 HCAPLUS
CN 1H-Imidazole, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

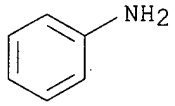
CRN 1072-63-5
CMF C5 H6 N2



RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

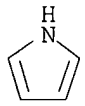
CRN 62-53-3
CMF C6 H7 N



RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 109-97-7
CMF C4 H5 N



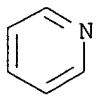
L149 ANSWER 20 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:328921 HCAPLUS
DN 140:342159
TI Polymer membranes for a membrane-**electrode** unit for **fuel cell**
PA Sartorius A.-G., Germany
SO Ger. Gebrauchsmusterschrift, 12 pp.
CODEN: GGXXFR
DT **Patent**
LA German
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 202004000365	U1	20040422	DE 2004-202004000365	20040113 <--

DE 10301810 A1 20040729 DE 2003-10301810 20030120 <--
PRAI DE 2003-10301810 IA 20030120 <--
AB A membrane-**electrode** unit for polymer electrolyte **fuel cells** with an operating temperature ≤250° consists at least of two laminar gas distribution **electrodes** and a sandwich-like in-between arranged polymer membrane with ≥1 basic polymer as well as a dopant, provided between them. The gas distribution **electrodes** are so charged that they represent a dopant reservoir for the polymer membrane, whereby the polymer membrane is **proton -conductive** and firmly tied up to the gas distribution **electrodes** over the dopant after effect of pressure and temperature and has in the doped condition a **conductivity** of at least 0.1 S/m at a temperature of >25°.
IC ICM H01M0008-02
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST polymer membrane **electrode** unit **fuel cell**
IT Membranes, nonbiological
(polymer membranes for membrane-**electrode** unit for **fuel cell**)
IT Polybenzimidazoles
Polybenzothiazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: DEV (Device component use); USES (Uses)
(polymer membranes for membrane-**electrode** unit for **fuel cell**)
IT **Fuel cells**
(solid electrolyte; polymer membranes for membrane-**electrode** unit for **fuel cell**)
IT 2425-79-8, 1,4-Butanediol diglycidyl ether
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(polymer membranes for membrane-**electrode** unit for **fuel cell**)
IT 298-07-7, Di(2-ethylhexyl) phosphate 838-85-7, Diphenyl phosphate 7440-06-4, Platinum, uses 7664-38-2D, Phosphoric acid, diester **25013-01-8**, Polypyridine **82370-43-2**, Polyimidazole **128611-69-8**, 1,3,4-Thiadiazole homopolymer **190201-51-5**, Pyrimidine homopolymer
RL: DEV (Device component use); USES (Uses)
(polymer membranes for membrane-**electrode** unit for **fuel cell**)
IT 7664-38-2, Phosphoric acid, uses
RL: MOA (Modifier or additive use); USES (Uses)
(polymer membranes for membrane-**electrode** unit for **fuel cell**)
IT **25013-01-8**, Polypyridine **82370-43-2**, Polyimidazole **128611-69-8**, 1,3,4-Thiadiazole homopolymer **190201-51-5**, Pyrimidine homopolymer
RL: DEV (Device component use); USES (Uses)
(polymer membranes for membrane-**electrode** unit for **fuel cell**)
RN 25013-01-8 HCAPLUS
CN Pyridine, homopolymer (9CI) (CA INDEX NAME)

CM 1

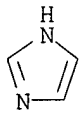
CRN 110-86-1
CMF C5 H5 N



RN 82370-43-2 HCAPLUS
CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

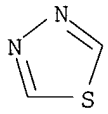
CRN 288-32-4
CMF C3 H4 N2



RN 128611-69-8 HCAPLUS
CN 1,3,4-Thiadiazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

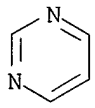
CRN 289-06-5
CMF C2 H2 N2 S



RN 190201-51-5 HCAPLUS
CN Pyrimidine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 289-95-2
CMF C4 H4 N2



L149 ANSWER 21 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:287993 HCAPLUS
DN 140:306759
TI Polyazole-based **proton-conducting** membrane for

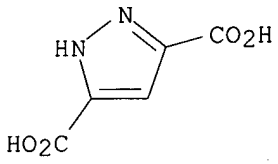
fuel cell use
IN Calundann, Gordon; Benicewicz, Brian; Baurmeister, Jochen
PA Celanese Ventures G.m.b.H., Germany; Pemeas GmbH
SO PCT Int. Appl., 44 pp.
CODEN: PIXXD2
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2004030135	A2	20040408	WO 2003-EP9198	20030820 <--
	WO 2004030135	A3	20050512		
	W: BR, CA, CN, JP, KR, MX, US				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
	DE 10242708	A1	20040519	DE 2002-10242708	20020913 <--
	CA 2498370	A1	20040408	CA 2003-2498370	20030820 <--
	EP 1550174	A2	20050706	EP 2003-747913	20030820 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
	CN 1689186	A	20051026	CN 2003-821673	20030820 <--
	JP 2005538237	T	20051215	JP 2004-538814	20030820 <--
	US 2006035095	A1	20060216	US 2005-527649	20051020 <--
PRAI	DE 2002-10242708	A	20020913 <--		
	WO 2003-EP9198	W	20030820		

AB The invention relates to novel **proton-conducting** and polyazole **conducting** polymer membrane based on the polyazoles and to the use thereof as a polymer electrolyte-membrane (PEM) for the production of membrane-**electrode**-units for PEM-**fuel cells**. The invention also relates to other molded bodies based on the polyazoles.
IC ICM H01M0008-10
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST polyazole based **proton conducting** membrane **fuel cell**
IT Amines, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(aromatic, tetra-; polyazole-based **proton-conducting** membrane for **fuel cell** use)
IT Carboxylic acids, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(dicarboxylic, aromatic; polyazole-based **proton-conducting** membrane for **fuel cell** use)
IT **Heterocyclic compounds**
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(**nitrogen**, five-membered, polymers; polyazole-based **proton-conducting** membrane for **fuel cell** use)
IT **Fuel cell electrolytes**
(polyazole-based **proton-conducting** membrane for **fuel cell** use)
IT Polybenzimidazoles
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(polyazole-based **proton-conducting** membrane for

fuel cell use)
IT Polybenzothiazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: DEV (Device component use); USES (Uses)
(polyazole-based **proton-conducting** membrane for **fuel cell** use)
IT **Fuel cells**
(solid electrolyte; polyazole-based **proton-conducting** membrane for **fuel cell** use)
IT 88-99-3, Phthalic acid, processes 89-05-4, Benzene 1,2,4,5-tetracarboxylic acid 91-95-2, 3,3',4,4'-Tetraaminobiphenyl 99-31-0, 5-Aminoisophthalic acid 100-21-0, Terephthalic acid, processes 100-26-5, Pyridine-2,5-dicarboxylic acid 100-31-2, 4,4'-Stilbenedicarboxylic acid 121-91-5, Isophthalic acid, processes 122-05-4, 2,5-Pyrazinedicarboxylic acid 128-97-2, Naphthalene-1,4,5,8-tetracarboxylic acid 482-05-3, Diphenic acid 499-80-9, Pyridine-2,4-dicarboxylic acid 499-81-0, Pyridine-3,5-dicarboxylic acid 499-83-2, Pyridine-2,6-dicarboxylic acid 528-44-9, Trimellitic acid 536-20-9, 2,4,6-Pyridine tricarboxylic acid 554-95-0, Trimesic acid 605-70-9, 1,4-Naphthalenedicarboxylic acid 610-92-4, 2,5-Dihydroxyterephthalic acid 618-83-7, 5-Hydroxyisophthalic acid 636-46-4, 4-Hydroxyisophthalic acid 636-94-2, 2-Hydroxyterephthalic acid 652-03-9, Tetrafluorophthalic acid 652-36-8, Tetrafluoroterephthalic acid 787-70-2, Biphenyl-4,4'-dicarboxylic acid 835-58-5, 4-Trifluoromethylphthalic acid 964-68-1, Benzophenone-4,4'-dicarboxylic acid 1141-38-4, 2,6-Naphthalenedicarboxylic acid 1147-65-5 1171-47-7, 2,2-Bis(4-carboxyphenyl)hexafluoropropane 1551-39-9, Tetrafluoroisophthalic acid 1583-66-0, 5-Fluoroisophthalic acid 1583-67-1, 3-Fluorophthalic acid 1779-05-1, 3,3',4,4'-Tetraaminodiphenylmethane 2089-89-6, 2,7-Naphthalenedicarboxylic acid 2215-89-6, Diphenyl ether-4,4'-dicarboxylic acid 2449-35-6, Diphenylsulfone-4,4'-dicarboxylic acid 2479-49-4, Benzophenonetetracarboxylic acid 2676-59-7, 3,3',4,4'-Tetraaminodiphenylether **3112-31-0**, 3,5-Pyrazole dicarboxylic acid 3204-61-3, 1,2,4,5-Tetraaminobenzene 3209-07-2, 3,5-Dihydroxyphthalic acid 3786-46-7, 3,6-Dihydroxyphthalic acid 3906-87-4 4371-28-2, 3,5,3',5'-Biphenyltetracarboxylic acid 4861-72-7, 5-(N,N-Dimethylamino)isophthalic acid 5007-67-0, 3,3',4,4'-Tetraaminobenzophenone 7315-96-0, 1,5-Naphthalenedicarboxylic acid 13224-79-8, 3,3',4,4'-Tetraaminodiphenylsulfone 19438-88-1 19675-63-9, 4-Carboxycinnamic acid 19829-72-2, 2,3-Dihydroxy-1,4-benzenedicarboxylic acid 36966-22-0 37645-41-3, 2,4-Pyrimidinedicarboxylic acid 38926-45-3, 2,3,5,6-Tetraaminopyridine 39155-64-1, 1,2,5,6-Naphthalenetetracarboxylic acid 59195-28-7, 2,5-Pyridinedicarboxylic acid, 4-phenyl- 82784-82-5, 3,4-Dihydroxyphthalic acid 603993-70-0 677010-19-4, 5-(N,N-Diethylamino)isophthalic acid 677010-20-7
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(polyazole-based **proton-conducting** membrane for **fuel cell** use)
IT 129-00-0D, Pyrene, Tetraza derivs. polymers **25013-01-8**, Polypyridine **128611-69-8**, 1,3,4-Thiadiazole homopolymer **190201-51-5**, Pyrimidine homopolymer
RL: DEV (Device component use); USES (Uses)
(polyazole-based **proton-conducting** membrane for **fuel cell** use)
IT **3112-31-0**, 3,5-Pyrazole dicarboxylic acid
RL: CPS (Chemical process); PEP (Physical, engineering or chemical

process); PROC (Process)
(polyazole-based **proton-conducting** membrane for **fuel cell** use)
RN 3112-31-0 HCAPLUS
CN 1H-Pyrazole-3,5-dicarboxylic acid (9CI) (CA INDEX NAME)



IT **25013-01-8**, Polypyridine **128611-69-8**, 1,3,4-Thiadiazole homopolymer **190201-51-5**, Pyrimidine homopolymer
RL: DEV (Device component use); USES (Uses)
(polyazole-based **proton-conducting** membrane for **fuel cell** use)
RN 25013-01-8 HCAPLUS
CN Pyridine, homopolymer (9CI) (CA INDEX NAME)

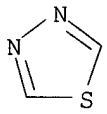
CM 1

CRN 110-86-1
CMF C5 H5 N

RN 128611-69-8 HCAPLUS
CN 1,3,4-Thiadiazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

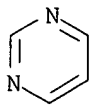
CRN 289-06-5
CMF C2 H2 N2 S



RN 190201-51-5 HCAPLUS
CN Pyrimidine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 289-95-2
CMF C4 H4 N2



L149 ANSWER 22 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:161244 HCAPLUS
DN 140:202430
TI Salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials
IN Armand, Michel; Michot, Christophe; Gauthier, Michel; Choquette, Yves
PA Hydro-Quebec, Can.; Centre National De La Recherche Scientifique (CNRS)
SO Eur. Pat. Appl., 33 pp.
CODEN: EPXXDW
DT **Patent**
LA French
FAN.CNT 5

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI EP 1391952	A2	20040225	EP 2003-292436	19971230 <--
R: DE, FR, GB, IT				
CA 2194127	A1	19980630	CA 1996-2194127	19961230 <--
CA 2199231	A1	19980905	CA 1997-2199231	19970305 <--
EP 850933	A1	19980701	EP 1997-403188	19971230 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
EP 889863	A2	19990113	EP 1997-951051	19971230 <--
EP 889863	B1	20030507		
R: DE, FR, GB, IT				
EP 890176	A1	19990113	EP 1997-951052	19971230 <--
EP 890176	B1	20010620		
R: DE, FR, GB, IT				
JP 2000508114	T	20000627	JP 1998-529517	19971230 <--
JP 2000508346	T	20000704	JP 1998-529516	19971230 <--
JP 2000508676	T	20000711	JP 1998-529514	19971230 <--
JP 2000508677	T	20000711	JP 1998-529515	19971230 <--
JP 2000508678	T	20000711	JP 1998-529518	19971230 <--
JP 2002514245	T	20020514	JP 1998-529513	19971230 <--
US 6120696	A	20000919	US 1998-125792	19980828 <--
US 6171522	B1	20010109	US 1998-101811	19981119 <--
US 6333425	B1	20011225	US 1998-101810	19981119 <--
US 6228942	B1	20010508	US 1998-125798	19981202 <--
US 6395367	B1	20020528	US 1998-125799	19981202 <--
US 6319428	B1	20011120	US 1998-125797	19981203 <--
US 6365068	B1	20020402	US 2000-609362	20000630 <--
US 6576159	B1	20030610	US 2000-638793	20000809 <--
US 2001024749	A1	20010927	US 2001-826941	20010406 <--
US 6506517	B2	20030114		
US 2002009650	A1	20020124	US 2001-858439	20010516 <--
US 2002102380	A1	20020801	US 2002-107742	20020327 <--
US 6835495	B2	20041228		
US 2003052310	A1	20030320	US 2002-253035	20020924 <--
US 2003066988	A1	20030410	US 2002-253970	20020924 <--
US 2005074668	A1	20050407	US 2004-789453	20040227 <--
US 2005123831	A1	20050609	US 2004-926283	20040825 <--
PRAI CA 1996-2194127	A	19961230 <--		
CA 1997-2199231	A	19970305 <--		

EP 1997-403188	A3	19971230	<--
WO 1997-CA1008	W	19971230	<--
WO 1997-CA1009	W	19971230	<--
WO 1997-CA1010	W	19971230	<--
WO 1997-CA1011	W	19971230	<--
WO 1997-CA1012	W	19971230	<--
WO 1997-CA1013	W	19971230	<--
US 1998-101810	A3	19981119	<--
US 1998-101811	A3	19981119	<--
US 1998-125798	A3	19981202	<--
US 1998-125799	A3	19981202	<--
US 1998-125797	A1	19981203	<--
US 2000-638793	A1	20000809	<--
US 2001-858439	A1	20010516	<--
US 2002-107742	A1	20020327	<--

AB This invention describes ionic compds. where the anionic charge is delocalized. One compound of the invention contains an anionic part associated with at least one mono- or multivalent cationic part Mm+, in a number sufficient to ensure electronic neutrality of the material. M can be a hydronium, nitrosyl NO+, an ammonium NH4+, a metallic cation with valence m, an organic cation having a valence m, or an organometallic cation having valence m. The anionic charge is carried by a new pentacyclic moiety or derivative of tetrapentalene carrying electroattractive substituents. The compds. are used notably for ionic conduction, electronic conductors, dyes and colorants, and catalysts for diverse chemical reactions. They can also be used as electrolytes in **fuel cells** and **batteries.**

IC ICM H01M0006-16
ICS H01M0010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 27, 28, 29, 35, 76

ST pentacyclic tetrapentalene salt charge delocalized anion ionic conduction; alkali alk earth transition metal salt heterocyclic electrolyte polymer; **electrochem cell** fuel polyelectrolyte cond soly catalysis fluoropolymer polysiloxane

IT Spinel-type crystals
(LiyMn1-xMxO2, pos. **electrode**; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Carbon black, uses
RL: DEV (Device component use); PRP (Properties); USES (Uses)
(composite **electrodes** with soft polymer or LiCoO2 and polymer gel electrolytes, or with acetylene black, VO2 and PEO; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Lithiation
(during **battery** operation; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT **Heterocyclic compounds**
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(**nitrogen**, five-membered, aromatic, anions of; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Cyclic voltammetry
(of secondary **battery** cells with polymer gel electrolytes; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Polysulfides

RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(organic, pos. **electrode**; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Olivine-group minerals
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(pos. **electrode**; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT **Secondary batteries**
(salts of pentacyclic or tetrapentalene derived anions for use in; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Aldol condensation catalysts
Antistatic agents
Coloring materials
Corrosion inhibitors
Dyes
Electron delocalization
Esterification
Friedel-Crafts reaction catalysts
Fuel cell separators
Heterojunction solar cells
Ionic liquids
Michael reaction catalysts
Plasticizers
Polyelectrolytes
Polymer electrolytes
Polymerization catalysts
Solubility
Substitution reaction, nucleophilic
Surfactants
(salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT Fluoropolymers, uses
Polyanilines
Salts, uses
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 12036-21-4, Vanadium dioxide
RL: DEV (Device component use); USES (Uses)
(**battery electrode** composites with acetylene black and PEO; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 210469-97-9P
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(composite **electrodes** with LiCoO2 and carbon black; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 661461-60-5DP, **polyaniline** doped with
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PUR (Purification or recovery); PYP (Physical process); SPN (Synthetic preparation); PREP (Preparation); PROC (Process)
(conductor and corrosion inhibitor; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 1314-35-8, Tungsten trioxide, uses 202847-01-6, Hydrogen iridium oxide
RL: DEV (Device component use); USES (Uses)
(**electrode**; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); PRP (Properties); TEM (Technical or engineered material use); USES (Uses)
(in **electrochem. cells**, and corrosion of; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 7439-93-2D, Lithium, alloys
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(neg. **electrode**; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 1317-37-9, Iron sulfide (FeS) 10028-22-5, Iron sulfate (Fe2(SO4)3) 11099-11-9, Vanadium oxide 12068-85-8, Iron disulfide (FeS2) 12423-04-0, Lithium vanadium oxide (LiV3O8) 61179-01-9, Aluminum lithium manganese oxide 131344-56-4, Cobalt lithium nickel oxide 133782-19-1, Lithium manganese vanadium oxide 162684-16-4, Lithium manganese nickel oxide 204450-96-4, Chromium lithium manganese oxide
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(pos. **electrode**; salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 289-06-5D, Thiadiazole, anionic derivs. **289-95-2D**, Pyrimidine, anionic derivs. 290-37-9D, Pyrazine, anionic derivs. 7439-93-2, Lithium, uses 11120-54-0D, Oxadiazole, anionic derivs.
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT **709-62-6P 7343-34-2P**, 3,5-Dimethyl-1H-1,2,4-triazole **25979-00-4P** 210289-29-5P **210289-38-6P** 210289-49-9P 210289-52-4P 210469-88-8P 210469-95-7P 661461-45-6P 661461-57-0P 661461-60-5P
RL: PUR (Purification or recovery); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

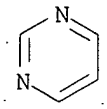
IT 76-05-1, reactions 78-94-4, Methyl vinyl ketone, reactions 94-41-7 98-88-4, Benzoyl chloride 100-52-7, Benzaldehyde, reactions 100-66-3, Anisole, reactions 102-52-3, 1,1,3,3-Tetramethoxypropane 106-20-7, Di-2-ethylhexylamine 108-24-7, Acetic anhydride 109-72-8, Butyllithium, reactions 110-61-2, Succinic dinitrile 112-76-5, Stearic acid chloride 121-44-8, Triethylamine, reactions 143-33-9, Sodium cyanide 144-55-8, Sodium bicarbonate, reactions 303-04-8, 2,3-Dichloro-Hexafluoro-2-butene 326-90-9, 4,4,4-Trifluoro-1-(2-furyl)-1,3-butanedione 326-91-0 375-72-4, Perfluorobutanesulfonyl fluoride 407-38-5, 2,2,2-Trifluoroethyl trifluoroacetate 421-83-0, Trifluoromethanesulfonyl chloride 497-19-8, Sodium carbonate, reactions 538-75-0, Dicyclohexylcarbodiimide 542-92-7, Cyclopentadiene, reactions 554-13-2, Lithium carbonate 584-08-7, Potassium carbonate 676-58-4, Methylmagnesium chloride 677-25-8, Ethenesulfonyl fluoride 692-50-2 693-13-0, 1,3-Diisopropylcarbodiimide 764-93-2, 1-Decyne 765-12-8, Triethylene glycol divinyl ether 917-70-4, Lanthanum acetate 937-14-4, 3-Chloroperoxybenzoic acid 1000-84-6 1068-57-1, Acetylhydrazide **1122-28-7**, 4,5-Dicyanoimidazole 1310-58-3, Potassium hydroxide, reactions 1522-22-1, Hexafluoroacetylacetone 1643-19-2, Tetrabutylammonium bromide 1648-99-3 2094-98-6, 1,1'-

Azobis(cyclohexanecarbonitrile) 2582-30-1, 1-Aminoguanidine bicarbonate 2633-67-2, 4-Styrenesulfonyl chloride 2638-94-0, 4,4'-Azobis(4-cyanovaleric acid) 2893-78-9, Dichloroisocyanuric acid, sodium salt 3804-23-7, Scandium acetate **4546-95-6**, 1,2,3-Triazole-4,5-dicarboxylic acid 7447-41-8, Lithium chloride, reactions 7647-01-0, Hydrochloric acid, reactions 7647-14-5, Sodium chloride, reactions 7664-39-3, Hydrofluoric acid, reactions 7757-82-6, Sodium sulfate, reactions 7758-09-0, Potassium nitrite 7782-50-5, Chlorine, reactions 7789-23-3, Potassium fluoride 9002-92-0, Brij 30 13360-57-1 13637-84-8, Chlorosulfonyl fluoride 13781-67-4, 2-(3-Thienyl)ethanol 14635-75-7, Nitrosonium tetrafluoroborate 16090-14-5 17455-13-9, 18-Crown-6 17587-22-3, 1,1,1,2,2,3,3-Heptafluoro-7,7-dimethyl-4,6-octanedione 20583-66-8, 1,1,1,5,5,6,6,7,7,7-Decafluoro-2,4-Heptanedione 26628-22-8, Sodium azide 27070-49-1, 1,2,3-Triazole 31469-15-5, 1-Methoxy-1-(trimethylsilyloxy)-2-methyl-1-propene 39262-22-1 39377-49-6, Copper cyanide 53188-07-1, Trolox 56512-49-3, 4-(Dimethylamino)azobenzene-4'-sulfonyl chloride 65039-09-0, 1-Ethyl-3-methyl-1H-imidazolium chloride 66051-48-7 77968-17-3 81850-46-6 81850-47-7 89183-45-9, **Polyaniline** hydrochloride 210049-00-6 210289-26-2 210289-55-7 210469-93-5 661461-58-1 661461-61-6
RL: RCT (Reactant); RACT (Reactant or reagent)
(salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

IT 7081-78-9P, 1-Chloro-1-ethoxyethane 14694-34-9P 210289-23-9P **210289-24-0P** 210289-27-3P 210289-28-4P 210289-33-1P 210289-34-2P 210289-35-3P 210469-96-8P 210470-00-1P 661461-47-8P 661461-59-2P 661467-33-0P
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

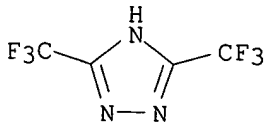
IT **289-95-2D**, Pyrimidine, anionic derivs.
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

RN 289-95-2 HCAPLUS
CN Pyrimidine (8CI, 9CI) (CA INDEX NAME)

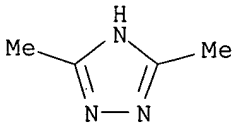


IT **709-62-6P 7343-34-2P**, 3,5-Dimethyl-1H-1,2,4-triazole **25979-00-4P 210289-38-6P**
RL: PUR (Purification or recovery); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)

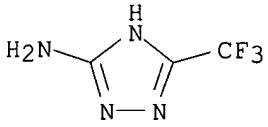
RN 709-62-6 HCAPLUS
CN 1H-1,2,4-Triazole, 3,5-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



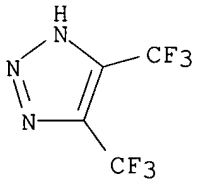
RN 7343-34-2 HCAPLUS
CN 1H-1,2,4-Triazole, 3,5-dimethyl- (9CI) (CA INDEX NAME)



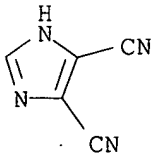
RN 25979-00-4 HCAPLUS
CN 1H-1,2,4-Triazol-3-amine, 5-(trifluoromethyl)- (9CI) (CA INDEX NAME)



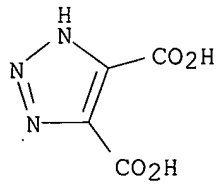
RN 210289-38-6 HCAPLUS
CN 1H-1,2,3-Triazole, 4,5-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



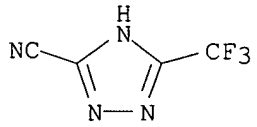
IT **1122-28-7**, 4,5-Dicyanoimidazole **4546-95-6**,
1,2,3-Triazole-4,5-dicarboxylic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)
RN 1122-28-7 HCAPLUS
CN 1H-Imidazole-4,5-dicarbonitrile (9CI) (CA INDEX NAME)



RN 4546-95-6 HCAPLUS
CN 1H-1,2,3-Triazole-4,5-dicarboxylic acid (9CI) (CA INDEX NAME)



IT **210289-24-0P**
RL: RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(salts of pentacyclic or tetrapentalene derived anions, and their uses as ionic conductive materials)
RN 210289-24-0 HCAPLUS
CN 1H-1,2,4-Triazole-3-carbonitrile, 5-(trifluoromethyl)- (9CI) (CA INDEX NAME)



L149 ANSWER 23 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:117315 HCAPLUS
DN 140:149157
TI An **electrode** for an **electrochemical cell** like a secondary **battery** and an electric double layer capacitor
IN **Nobuta, Tomoki; Nishiyama, Toshihiko; Kamisuki, Hiroyuki; Kaneko, Shinako; Kurosaki, Masato; Nakagawa, Yuji; Mitani, Masaya**
PA **NEC Tokin** Corporation, Japan
SO Eur. Pat. Appl., 20 pp.
CODEN: EPXXDW
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1388906	A2	20040211	EP 2003-16458	20030722 <--
	EP 1388906	A3	20061011		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	JP 2004127920	A	20040422	JP 2003-198660	20030717 <--
	JP 3701952	B2	20051005		
	KR 2004014247	A	20040214	KR 2003-53615	20030802 <--
	CN 1481042	A	20040310	CN 2003-152651	20030804 <--
	US 2004029003	A1	20040212	US 2003-634607	20030805 <--
	TW 241734	B	20051011	TW 2003-92121409	20030805 <--
	HK 1060654	A1	20051125	HK 2004-102952	20040427 <--
PRAI	JP 2002-227160	A	20020805 <--		

AB This invention provides an **electrode** for an **electrochem**

. **cell** in which an active material in an **electrode** material is a **proton-conducting** compound, wherein the **electrode** material comprises a nitrogen-containing heterocyclic compound or a polymer having a unit containing a nitrogen-containing heterocyclic moiety.

IC ICM H01M0004-60
ICS H01M0004-02

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 27, 38, **72**, **76**

ST **battery electrode** nitrogen contg heterocyclic compd; elec double layer capacitor **electrode** nitrogen contg heterocyclic compd

IT Capacitors
(double layer; **electrode** for **electrochem. cell** like secondary **battery** and elec. double layer capacitor)

IT **Battery cathodes**
Battery electrodes
Capacitor electrodes
Secondary batteries
(**electrode** for **electrochem. cell** like secondary **battery** and elec. double layer capacitor)

IT Carbon black, uses
Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**electrode** for **electrochem. cell** like secondary **battery** and elec. double layer capacitor)

IT **Heterocyclic compounds**
RL: DEV (Device component use); USES (Uses)
(**nitrogen**; **electrode** for **electrochem. cell** like secondary **battery** and elec. double layer capacitor)

IT **Heterocyclic compounds**
RL: DEV (Device component use); USES (Uses)
(polymers, **nitrogen**-containing; **electrode** for **electrochem. cell** like secondary **battery** and elec. double layer capacitor)

IT **Polyquinoxalines**
RL: DEV (Device component use); USES (Uses)
(polyphenylquinoxalines; **electrode** for **electrochem. cell** like secondary **battery** and elec. double layer capacitor)

IT **51-17-2**, Benzimidazole **51-17-2D**, Benzimidazole, derivative
288-13-1, Pyrazole **288-13-1D**, Pyrazole, derivative
288-32-4, Imidazole, uses **288-32-4D**, Imidazole, derivative
288-88-0, 1H-1,2,4-Triazole **670-96-2**, 2-Phenylimidazole
20154-03-4, 3-Trifluoromethylpyrazole **25232-42-2**, Polyvinylimidazole 37306-44-8, Triazole 37306-44-8D, Triazole, derivative
420784-28-7, 1H-**Indole trimer** 652968-46-2
652968-47-3 **652968-48-4**
RL: DEV (Device component use); USES (Uses)
(**electrode** for **electrochem. cell** like secondary **battery** and elec. double layer capacitor)

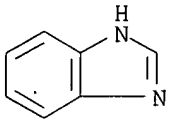
IT 24937-79-9, Polyfluorovinylidene
RL: MOA (Modifier or additive use); USES (Uses)
(**electrode** for **electrochem. cell** like secondary **battery** and elec. double layer capacitor)

IT 7440-44-0, Carbon, uses
RL: MOA (Modifier or additive use); USES (Uses)

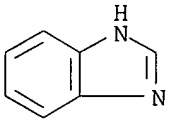
(vapor-grown; **electrode** for **electrochem.** **cell** like secondary **battery** and elec. double layer capacitor)

IT **51-17-2**, Benzimidazole **51-17-2D**, Benzimidazole, derivative **288-13-1**, Pyrazole **288-13-1D**, Pyrazole, derivative **288-32-4**, Imidazole, uses **288-32-4D**, Imidazole, derivative **288-88-0**, 1H-1,2,4-Triazole **670-96-2**, 2-Phenylimidazole **20154-03-4**, 3-Trifluoromethylpyrazole **25232-42-2**, Polyvinylimidazole **420784-28-7**, 1H-**Indole** **trimer 652968-48-4**
RL: DEV (Device component use); USES (Uses)
(**electrode** for **electrochem.** **cell** like secondary **battery** and elec. double layer capacitor)

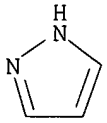
RN 51-17-2 HCAPLUS
CN 1H-Benzimidazole (9CI) (CA INDEX NAME)



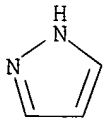
RN 51-17-2 HCAPLUS
CN 1H-Benzimidazole (9CI) (CA INDEX NAME)



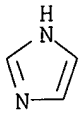
RN 288-13-1 HCAPLUS
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



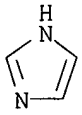
RN 288-13-1 HCAPLUS
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



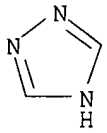
RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



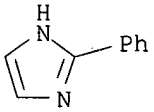
RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



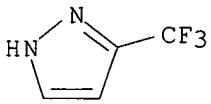
RN 288-88-0 HCAPLUS
CN 1H-1,2,4-Triazole (7CI, 9CI) (CA INDEX NAME)



RN 670-96-2 HCAPLUS
CN 1H-Imidazole, 2-phenyl- (9CI) (CA INDEX NAME)



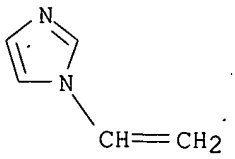
RN 20154-03-4 HCAPLUS
CN 1H-Pyrazole, 3-(trifluoromethyl)- (9CI) (CA INDEX NAME)



RN 25232-42-2 HCAPLUS
CN 1H-Imidazole, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

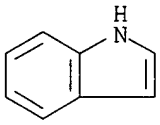
CRN 1072-63-5
CMF C5 H6 N2



RN 420784-28-7 HCAPLUS
CN 1H-Indole, trimer (9CI) (CA INDEX NAME)

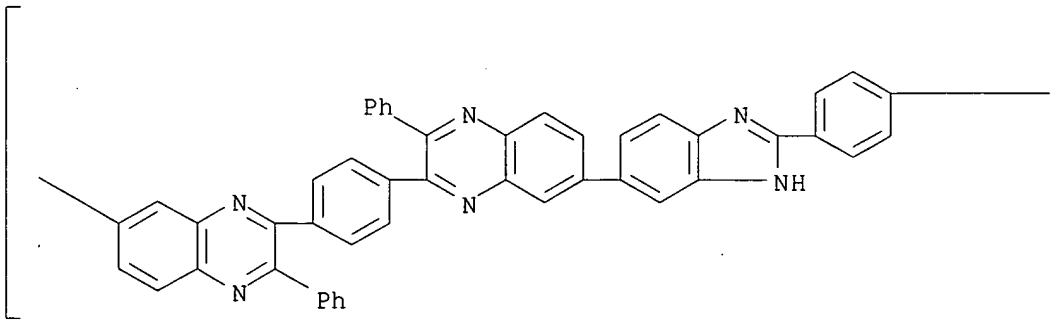
CM 1

CRN 120-72-9
CMF C8 H7 N

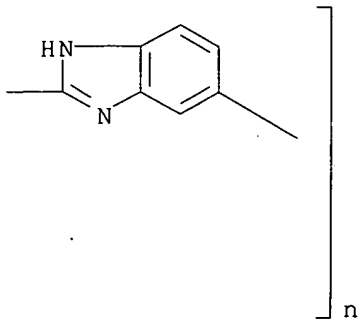


RN 652968-48-4 HCAPLUS
CN Poly[(3-phenyl-7,2-quinoxalinediyl)-1,4-phenylene(3-phenyl-2,7-quinoxalinediyl)-1H-benzimidazole-5,2-diyl-1,4-phenylene-1H-benzimidazole-2,5-diyl] (9CI) (CA INDEX NAME)

PAGE 1-A



PAGE 1-B



L149 ANSWER 24 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:117171 HCAPLUS
DN 140:165009
TI **Proton-conductive** polyazole membranes containing phosphonic acid group-containing polymers and their application in **fuel cells**
IN Calundann, Gordon; Uensal, Oemer; Kiefer, Joachim
PA Celanese Ventures GmbH, Germany
SO Ger. Offen., 32 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10235358	A1	20040212	DE 2002-10235358	20020802 <--
	CA 2494330	A1	20040219	CA 2003-2494330	20030731 <--
	WO 2004015802	A1	20040219	WO 2003-EP8461	20030731 <--
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	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
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	EP 1527493	B1	20060104		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
	CN 1675790	A	20050928	CN 2003-818584	20030731 <--
	JP 2005534784	T	20051117	JP 2004-526830	20030731 <--
	AT 315278	T	20060215	AT 2003-784120	20030731 <--
	US 2005244694	A1	20051103	US 2005-522839	20050606 <--
PRAI	DE 2002-10235358	A	20020802 <--		
	WO 2003-EP8461	W	20030731		

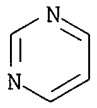
AB The present invention concerns **proton-conductive** polymer membranes phosphonic acid group-containing polymers, available by a procedure, comprising the steps: (A) mixing one or more aromatic tetra amino compds. with one or more aromatic carboxylic acids and/or their esters, which contain at least two acid radicals , or mixing one or more aromatic and/or heteroarom. diaminocarboxylic acids, in . vinyl-containing phosphonic acids to form a solution and/or a dispersion, (B) heating the solution and/or dispersion from step (A) under inert gas to temps. of ≤350° to form a polyazole, (C) applying a layer using the mixture in accordance with step (A) and/or (B) on a carrier, and (D) polymerization of the vinyl-containing phosphonic acids existing in the layer from step (C).
IC ICM C08J0005-22

ICS H01M0008-02; B01D0071-58
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): **52**
ST **proton conductive** polyazole membrane **fuel cell**; vinyl phosphonic acid polymer contg polyazole membrane
IT Polymerization
(cyclopolymn.; of aromatic tetraamino compds. with polycarboxylic acids in presence of vinyl-containing phosphonic acids in manufacture of **proton**-containing membranes)
IT Polymerization
(of vinyl compds. having phosphonic acids in presence of polyazoles in manufacture of **proton conductive** membranes for **fuel cells**)
IT Vinyl compounds, uses
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymers, phosphonic acid-containing; **proton-conductive** polyazole membranes containing phosphonic acid-containing vinyl polymers for **fuel cells**)
IT Sulfonic acids, uses
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymers; **proton-conductive** polyazole membranes containing phosphonic acid-containing vinyl polymers for **fuel cells**)
IT **Fuel cell electrodes**
Fuel cell separators
Ionic **conductors**
Polyelectrolytes
(**proton-conductive** polyazole membranes containing phosphonic acid-containing vinyl polymers for **fuel cells**)
IT Polybenzimidazoles
Polybenzothiazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**proton-conductive** polyazole membranes containing phosphonic acid-containing vinyl polymers for **fuel cells**)
IT Polymer blends
RL: TEM (Technical or engineered material use); USES (Uses)
(**proton-conductive** polyazole membranes containing phosphonic acid-containing vinyl polymers for **fuel cells**)
IT Polymers, uses
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(sulfo-containing; **proton-conductive** polyazole membranes containing phosphonic acid-containing vinyl polymers for **fuel cells**)
IT 13598-36-2DP, Phosphonic acid, vinyl group-containing, polymers
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**proton-conductive** polyazole membranes containing phosphonic acid-containing vinyl polymers for **fuel cells**)
IT 110-86-1DP, Pyridine, polymers 289-06-5DP, Thiadiazole, polymers

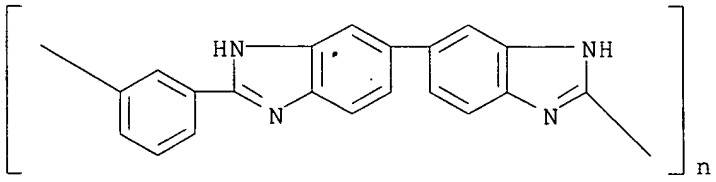
289-95-2DP, Pyrimidine, polymers **25734-65-0P**
27233-57-4P 28576-59-2P 32075-68-6P
32109-42-5P, Poly(1H-benzimidazole-2,5-diyl) **42209-07-4P**
55861-56-8P 56713-21-4P 82370-43-2P,
Polyimidazole **96926-85-1P 111404-83-2P**
111404-85-4P 132937-69-0P 240799-37-5P
268567-69-7P 368871-22-1P 471256-97-0P
471256-98-1P 471256-99-2P 471257-00-8P
471257-01-9P 471257-02-0P 472960-34-2P
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**proton-conductive** polyazole membranes containing phosphonic acid-containing vinyl polymers for **fuel cells**)

IT **289-95-2DP**, Pyrimidine, polymers **25734-65-0P**
27233-57-4P 28576-59-2P 32075-68-6P
32109-42-5P, Poly(1H-benzimidazole-2,5-diyl) **42209-07-4P**
55861-56-8P 56713-21-4P 82370-43-2P,
Polyimidazole **96926-85-1P 111404-83-2P**
111404-85-4P 132937-69-0P 240799-37-5P
268567-69-7P 368871-22-1P 471256-97-0P
471256-98-1P 471256-99-2P 471257-00-8P
471257-01-9P 471257-02-0P 472960-34-2P
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**proton-conductive** polyazole membranes containing phosphonic acid-containing vinyl polymers for **fuel cells**)

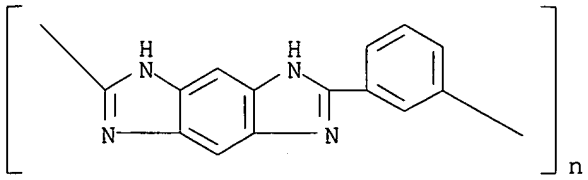
RN 289-95-2 HCAPLUS
CN Pyrimidine (8CI, 9CI) (CA INDEX NAME)



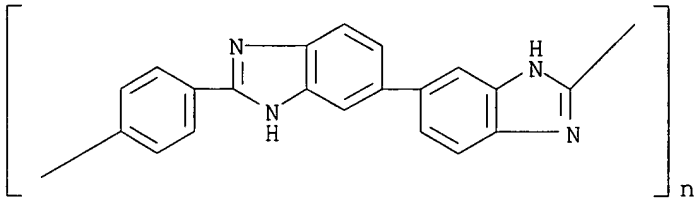
RN 25734-65-0 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1,3-phenylene) (9CI) (CA INDEX NAME)



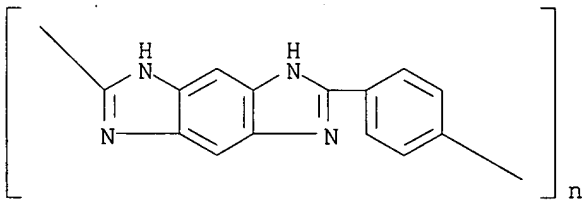
RN 27233-57-4 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-1,3-phenylene] (9CI) (CA INDEX NAME)



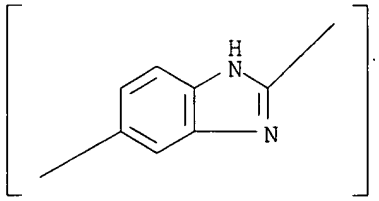
RN 28576-59-2 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1,4-phenylene) (9CI) (CA INDEX NAME)



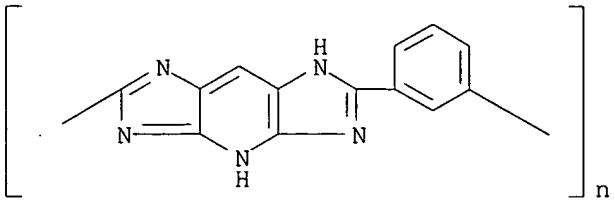
RN 32075-68-6 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-1,4-phenylene] (9CI) (CA INDEX NAME)



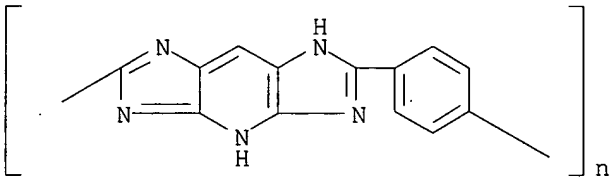
RN 32109-42-5 HCAPLUS
CN Poly(1H-benzimidazole-2,5-diyl) (9CI) (CA INDEX NAME)



RN 42209-07-4 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)-1,3-phenylene] (9CI) (CA INDEX NAME)



RN 55861-56-8 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)-1,4-phenylene] (9CI) (CA INDEX NAME)

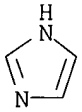


RN 56713-21-4 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diylpyridinediyl) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 82370-43-2 HCAPLUS
CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 288-32-4
CMF C3 H4 N2



RN 96926-85-1 HCAPLUS
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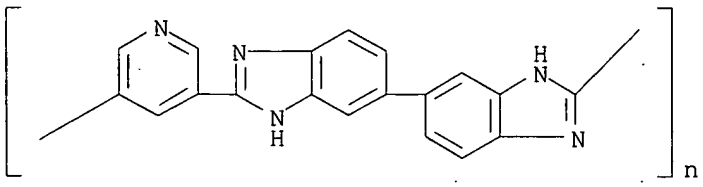
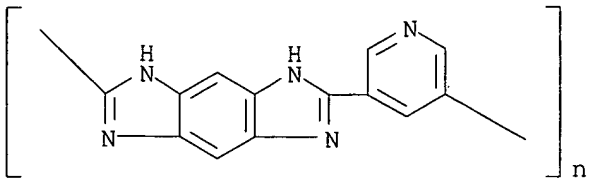
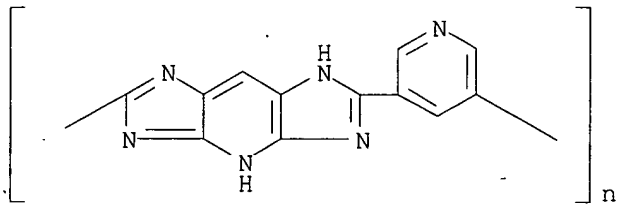


RN 111404-83-2 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-3,5-

pyridinediyl] (9CI) (CA INDEX NAME)



RN 111404-85-4 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)-3,5-pyridinediyl] (9CI) (CA INDEX NAME)



RN 132937-69-0 HCAPLUS
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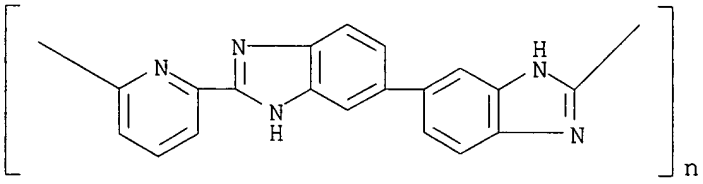
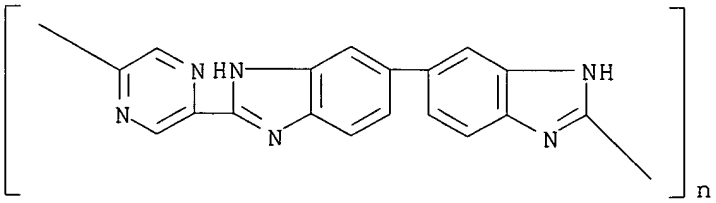
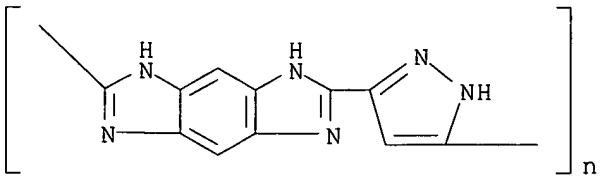


RN 240799-37-5 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-2,5-pyrazinediyl) (9CI) (CA INDEX NAME)

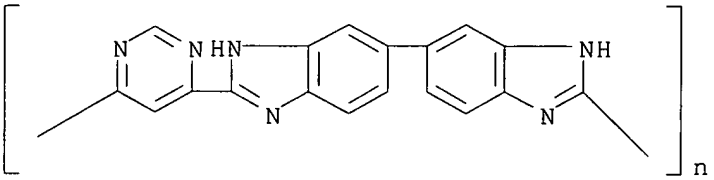


RN 268567-69-7 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-1H-pyrazole-3,5-diyl] (9CI) (CA INDEX NAME)

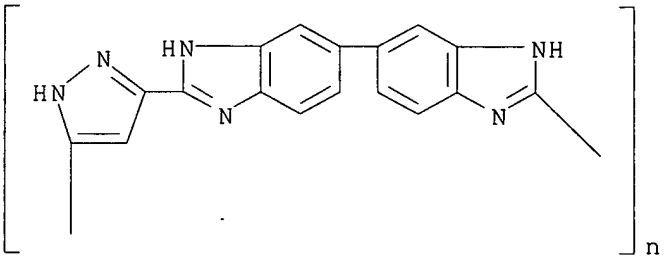


RN 368871-22-1 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)pyridinediyl] (9CI) (CA INDEX NAME)

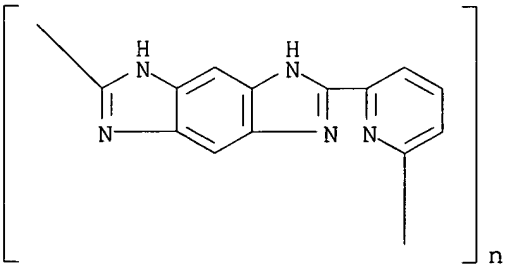
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 471256-97-0 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-4,6-pyrimidinediyl) (9CI) (CA INDEX NAME)



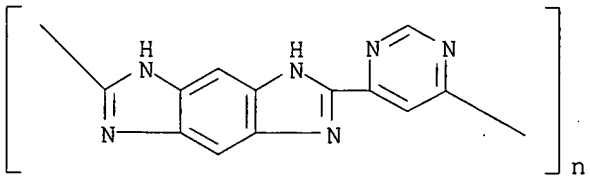
RN 471256-98-1 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1H-pyrazole-3,5-diyl) (9CI) (CA INDEX NAME)



RN 471256-99-2 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-2,6-pyridinediyl] (9CI) (CA INDEX NAME)



RN 471257-00-8 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-4,6-pyrimidinediyl] (9CI) (CA INDEX NAME)



RN 471257-01-9 HCAPLUS
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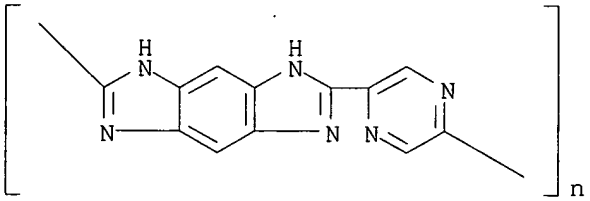
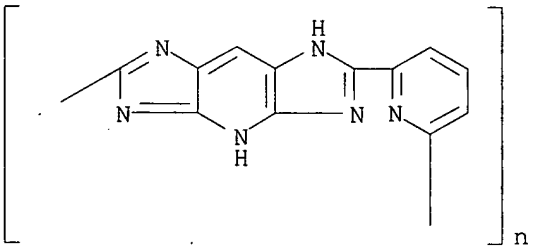


RN 471257-02-0 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)-2,6-pyridinediyl] (9CI) (CA INDEX NAME)



RN 472960-34-2 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)pyridinediyl] (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L149 ANSWER 25 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:117170 HCAPLUS
DN 140:165008
TI **Proton-conductive** polyazole membranes containing polymers having phosphonic acid and sulfonic acid groups and their application in **fuel cells**
IN Calundann, Gordon; Uensal, Oemer; Kiefer, Joachim
PA Celanese Ventures GmbH, Germany
SO Ger. Offen., 32 pp.
CODEN: GWXXBX
DT **Patent**

LA German
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10235357	A1	20040212	DE 2002-10235357	20020802 <--
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	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
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PRAI	DE 2002-10235356	A	20020802 <--		
	DE 2002-10235357	A	20020802 <--		
	WO 2003-EP8462	W	20030731		

AB The present invention concerns **proton-conductive** polymer membranes containing polymers having sulfonic acid and phosphonic acid groups, available by a procedure, comprising the steps: (A) mixing one or more aromatic tetra amino compds. with one or more aromatic carboxylic acids and/or their esters, which contain at least two acid radicals , or mixing one or more aromatic and/or heteroarom. diaminocarboxylic acids, in mixts. containing vinyl-containing sulfonic acids and vinyl-containing phosphonic acids to form a solution and/or a dispersion, (B) heating the solution and/or dispersion from step (A) under inert gas to temps. of ≤350° to form a polyazole, (C) applying a layer using the mixture in accordance with step (A) and/or (B) on a carrier, and (D) polymerization of the vinyl-containing sulfonic acids and vinyl-containing phosphonic acids existing in the layer from step (C).

IC ICM C08J0005-22
ICS C08L0079-00; H01M0008-02; B01D0071-58

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): **52**

ST **proton conductive** polyazole membrane **fuel cell**; vinyl sulfonic acid phosphonic acid polymer contg polyazole membrane

IT Polymerization
(cyclopolymn.; of aromatic tetraamino compds. with polycarboxylic acids in presence of vinyl-containing sulfonic acids and vinyl-containing phosphonic acids in manufacture of **proton**-containing membranes)

IT Polymerization
(of phosphonic acid-containing vinyl compds. and sulfonic acid-containing vinyl compds. in presence of polyazoles in manufacture of **proton conductive** membranes for **fuel cells**)

IT Vinyl compounds, uses
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymers, sulfonic acid- and phosphonic acid-containing; **proton-conductive** polyazole membranes containing vinyl polymers having phosphonic acid and sulfonic acid groups for **fuel cells**)

IT Sulfonic acids, uses

RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymers; **proton-conductive** polyazole membranes containing vinyl polymers having phosphonic acid and sulfonic acid groups for **fuel cells**)

IT **Fuel cell electrodes**
Fuel cell separators
Ionic **conductors**
Polyelectrolytes
(**proton-conductive** polyazole membranes containing vinyl polymers having phosphonic acid and sulfonic acid groups for **fuel cells**)

IT Polybenzimidazoles
Polybenzothiazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**proton-conductive** polyazole membranes containing vinyl polymers having phosphonic acid and sulfonic acid groups for **fuel cells**)

IT Polymer blends
RL: TEM (Technical or engineered material use); USES (Uses)
(**proton-conductive** polyazole membranes containing vinyl polymers having phosphonic acid and sulfonic acid groups for **fuel cells**)

IT Polymers, uses
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(sulfo-containing; **proton-conductive** polyazole membranes containing vinyl polymers having phosphonic acid and sulfonic acid groups for **fuel cells**)

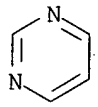
IT 13598-36-2DP, Phosphonic acid, vinyl group-containing, polymers
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**proton-conductive** polyazole membranes containing vinyl polymers having phosphonic acid and sulfonic acid groups for **fuel cells**)

IT 110-86-1DP, Pyridine, polymers 289-06-5DP, Thiadiazole, polymers
289-95-2DP, Pyrimidine, polymers **25734-65-0P**
27233-57-4P 28576-59-2P 32075-68-6P
32109-42-5P, Poly(1H-benzimidazole-2,5-diyl) **42209-07-4P**
55861-56-8P 56713-21-4P 82370-43-2P,
Polyimidazole **96926-85-1P 111404-83-2P**
111404-85-4P 132937-69-0P 240799-37-5P
268567-69-7P 368871-22-1P 471256-97-0P
471256-98-1P 471256-99-2P 471257-00-8P
471257-01-9P 471257-02-0P 472960-34-2P
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**proton-conductive** polyazole membranes containing vinyl polymers having phosphonic acid and sulfonic acid groups for **fuel cells**)

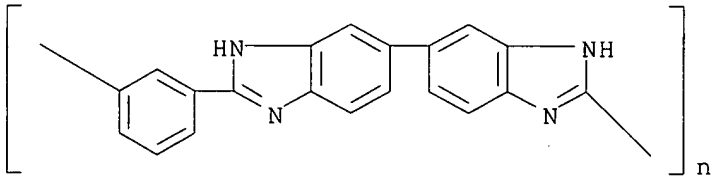
IT **289-95-2DP**, Pyrimidine, polymers **25734-65-0P**
27233-57-4P 28576-59-2P 32075-68-6P
32109-42-5P, Poly(1H-benzimidazole-2,5-diyl) **42209-07-4P**
55861-56-8P 56713-21-4P 82370-43-2P,
Polyimidazole **96926-85-1P 111404-83-2P**
111404-85-4P 132937-69-0P 240799-37-5P

268567-69-7P 368871-22-1P 471256-97-0P
471256-98-1P 471256-99-2P 471257-00-8P
471257-01-9P 471257-02-0P 472960-34-2P
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**proton-conductive** polyazole membranes containing vinyl polymers having phosphonic acid and sulfonic acid groups for **fuel cells**)

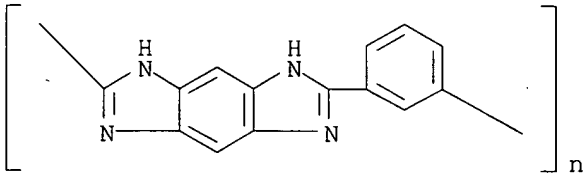
RN 289-95-2 HCAPLUS
CN Pyrimidine (8CI, 9CI) (CA INDEX NAME)



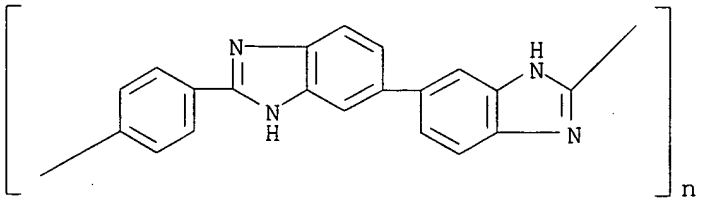
RN 25734-65-0 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1,3-phenylene) (9CI) (CA INDEX NAME)



RN 27233-57-4 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-1,3-phenylene] (9CI) (CA INDEX NAME)

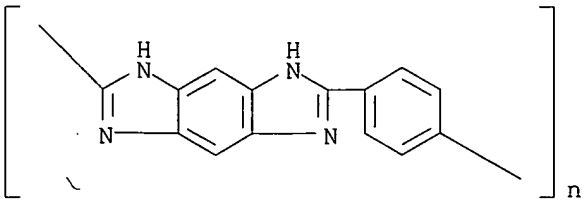


RN 28576-59-2 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1,4-phenylene) (9CI) (CA INDEX NAME)

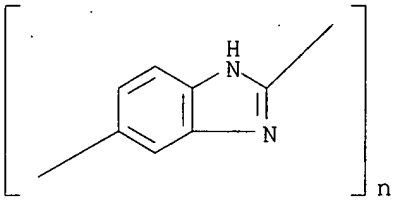


RN 32075-68-6 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-1,4-phenylene]

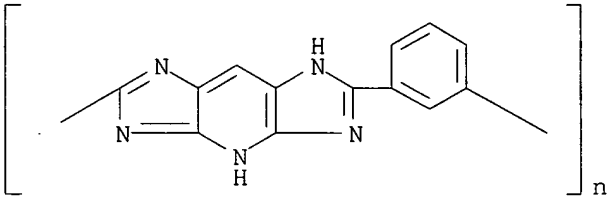
(9CI) (CA INDEX NAME)



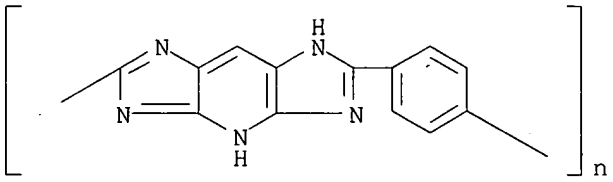
RN 32109-42-5 HCAPLUS
CN Poly(1H-benzimidazole-2,5-diyl) (9CI) (CA INDEX NAME)



RN 42209-07-4 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)-1,3-phenylene] (9CI) (CA INDEX NAME)



RN 55861-56-8 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)-1,4-phenylene] (9CI) (CA INDEX NAME)

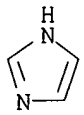


RN 56713-21-4 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diylpyridinediyl) (9CI) (CA INDEX NAME)

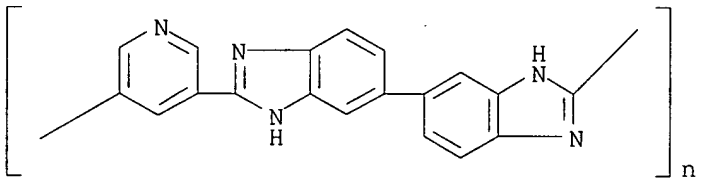
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 82370-43-2 HCAPLUS
CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

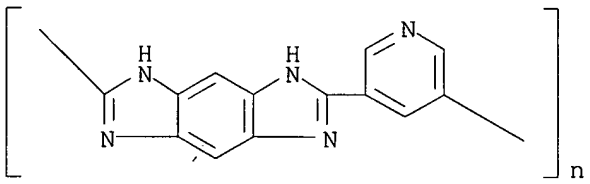
CRN 288-32-4
CMF C3 H4 N2



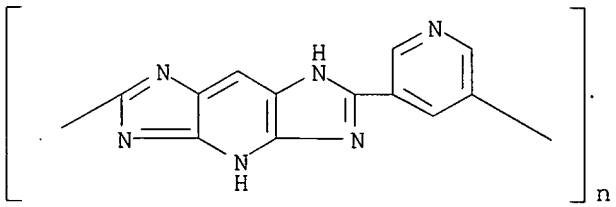
RN 96926-85-1 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-3,5-pyridinediyl) (9CI) (CA INDEX NAME)



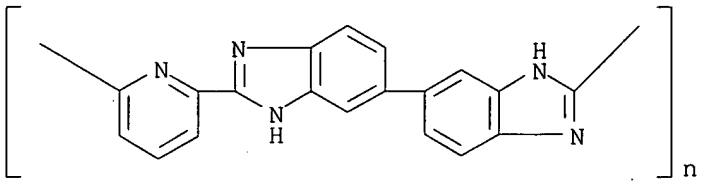
RN 111404-83-2 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-3,5-pyridinediyl] (9CI) (CA INDEX NAME)



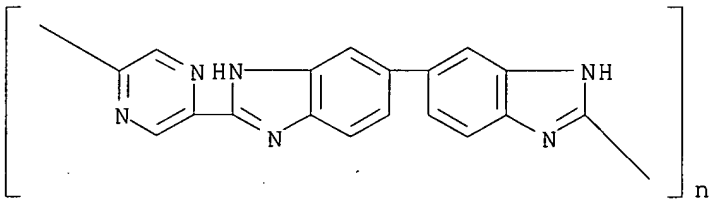
RN 111404-85-4 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)-3,5-pyridinediyl] (9CI) (CA INDEX NAME)



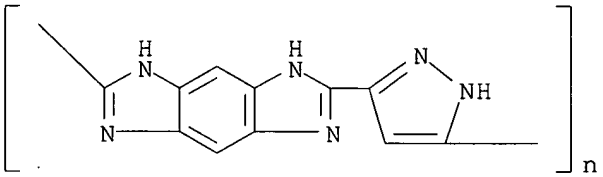
RN 132937-69-0 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-2,6-pyridinediyl) (9CI) (CA INDEX NAME)



RN 240799-37-5 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-2,5-pyrazinediyl) (9CI) (CA INDEX NAME)

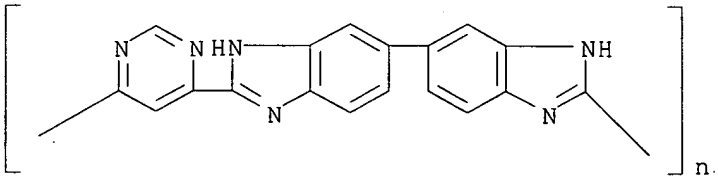


RN 268567-69-7 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-1H-pyrazole-3,5-diyl] (9CI) (CA INDEX NAME)

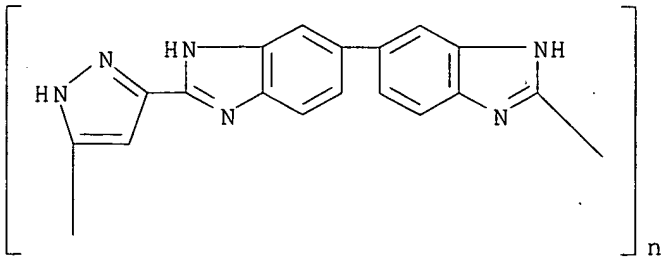


RN 368871-22-1 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)pyridinediyl] (9CI) (CA INDEX NAME)

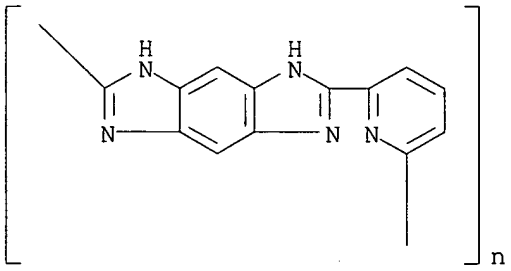
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 471256-97-0 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-4,6-pyrimidinediyl) (9CI) (CA INDEX NAME)



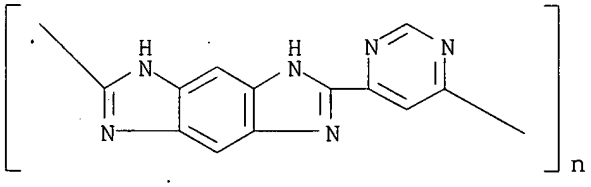
RN 471256-98-1 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1H-pyrazole-3,5-diyl) (9CI) (CA INDEX NAME)



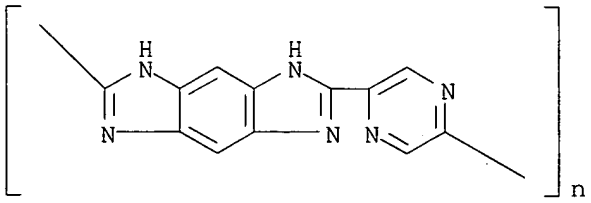
RN 471256-99-2 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-2,6-pyridinediyl] (9CI) (CA INDEX NAME)



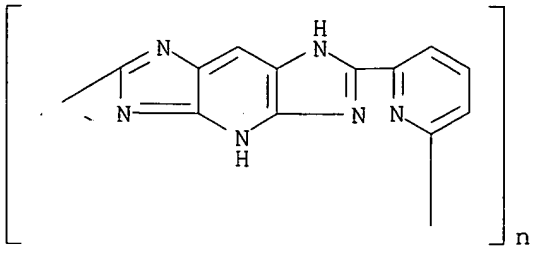
RN 471257-00-8 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-4,6-pyrimidinediyl] (9CI) (CA INDEX NAME)



RN 471257-01-9 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-2,5-pyrazinediyl] (9CI) (CA INDEX NAME)



RN 471257-02-0 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)-2,6-pyridinediyl] (9CI) (CA INDEX NAME)



RN 472960-34-2 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)pyridinediyl] (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L149 ANSWER 26 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:117169 HCAPLUS
DN 140:165007
TI **Proton-conductive** polymer membrane based on sulfonic acid-containing polymers and their application in **fuel cells**
PA Celanese Ventures GmbH, Germany
SO Ger. Offen., 31 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10235356	A1	20040212	DE 2002-10235356	20020802 <--
	CA 2494530	A1	20040219	CA 2003-2494530	20030731 <--
	WO 2004015803	A1	20040219	WO 2003-EP8462	20030731 <--
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	EP 1527494	A1	20050504	EP 2003-784121	20030731 <--
	EP 1527494	B1	20051228		
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	CN 1682400	A	20051012	CN 2003-821477	20030731 <--
	AT 314735	T	20060115	AT 2003-784121	20030731 <--
	US 2005244695	A1	20051103	US 2005-523373	20050323 <--
PRAI	DE 2002-10235356	A	20020802 <--		
	DE 2002-10235357	A	20020802 <--		
	WO 2003-EP8462	W	20030731		

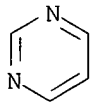
AB The present invention concerns **proton-conductive** polymer membranes containing sulfonic acid-containing polymers, available by a procedure, comprising the steps: (A) mixing one or more aromatic tetra amino compds. with one or more aromatic carboxylic acids and/or their esters, which contain at least two acid radicals , or mixing one or more aromatic and/or heteroarom. diaminocarboxylic acids, in a vinyl-containing sulfonic acid to form a solution and/or a dispersion, (B) heating the solution and/or dispersion from step (A) under inert gas to temps. of ≤350° to form a polyazole, (C) applying a layer using the mixture in accordance with step (A) and/or (B) on a carrier, and (D) polymerization of the vinyl-containing sulfonic acid existing in the layer from step (C).

IC ICM C08J0005-22
ICS C08L0079-06; H01M0008-02; B01D0071-58
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): **52**
ST **proton conductive** polyazole membrane **fuel cell**; vinyl sulfonic acid polymer contg polyazole membrane
IT Polymerization
(cyclopolymn.; of aromatic tetraamino compds. with polycarboxylic acids in presence of vinyl-containing sulfonic acids in manufacture of **proton-conducting** membranes for **fuel cells**)
IT Polymerization
(of vinyl containing sulfonic acids in presence of polyazoles in manufacture of **proton conductive** membranes for **fuel cells**)
IT Vinyl compounds, uses
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymers, sulfo-containing; **proton-conductive** polyazole membranes containing sulfonic acid-containing vinyl polymers for **fuel cells**)
IT Sulfonic acids, uses
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymers; **proton-conductive** polyazole membranes containing sulfonic acid-containing vinyl polymers for **fuel cells**)
IT **Fuel cell electrodes**
Fuel cell separators
Ionic **conductors**
Polyelectrolytes
(**proton-conductive** polyazole membranes containing sulfonic acid-containing vinyl polymers for **fuel cells**)
IT Polybenzimidazoles
Polybenzothiazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**proton-conductive** polyazole membranes containing sulfonic acid-containing vinyl polymers for **fuel cells**)
IT Polymer blends
RL: TEM (Technical or engineered material use); USES (Uses)
(**proton-conductive** polyazole membranes containing sulfonic acid-containing vinyl polymers for **fuel cells**)
IT Polymers, uses
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(sulfo-containing; **proton-conductive** polyazole membranes containing sulfonic acid-containing vinyl polymers for **fuel cells**)
IT 110-86-1DP, Pyridine, polymers 289-06-5DP, Thiadiazole, polymers
289-95-2DP, Pyrimidine, polymers **25734-65-0P**
27233-57-4P 28576-59-2P 32075-68-6P
32109-42-5P, Poly(1H-benzimidazole-2,5-diyl) **42209-07-4P**
55861-56-8P 56713-21-4P 82370-43-2P,
Polyimidazole **96926-85-1P 111404-83-2P**
111404-85-4P 132937-69-0P 240799-37-5P
268567-69-7P 368871-22-1P 471256-97-0P

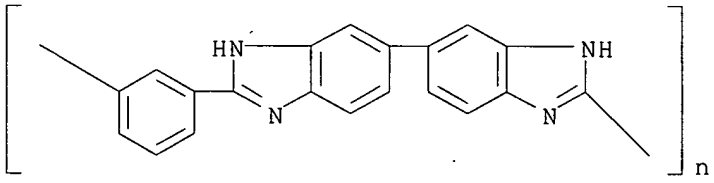
471256-98-1P 471256-99-2P 471257-00-8P
471257-01-9P 471257-02-0P 472960-34-2P
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**proton-conductive** polyazole membranes containing sulfonic acid-containing vinyl polymers for **fuel cells**)

IT **289-95-2DP**, Pyrimidine, polymers **25734-65-0P**
27233-57-4P 28576-59-2P 32075-68-6P
32109-42-5P, Poly(1H-benzimidazole-2,5-diyl) **42209-07-4P**
55861-56-8P 56713-21-4P 82370-43-2P,
Polyimidazole **96926-85-1P 111404-83-2P**
111404-85-4P 132937-69-0P 240799-37-5P
268567-69-7P 368871-22-1P 471256-97-0P
471256-98-1P 471256-99-2P 471257-00-8P
471257-01-9P 471257-02-0P 472960-34-2P
RL: IMF (Industrial manufacture); POF (Polymer in formulation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**proton-conductive** polyazole membranes containing sulfonic acid-containing vinyl polymers for **fuel cells**)

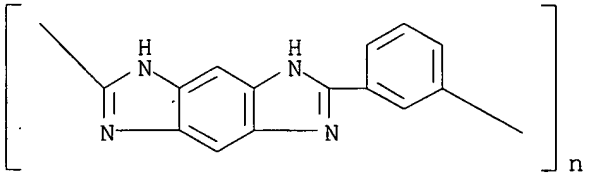
RN 289-95-2 HCAPLUS
CN Pyrimidine (8CI, 9CI) (CA INDEX NAME)



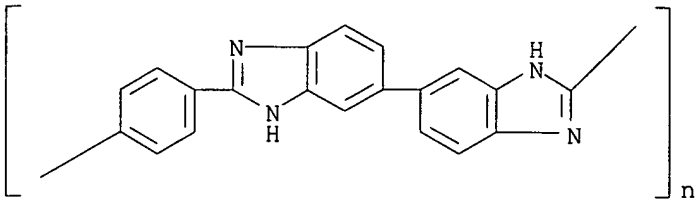
RN 25734-65-0 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1,3-phenylene) (9CI) (CA INDEX NAME)



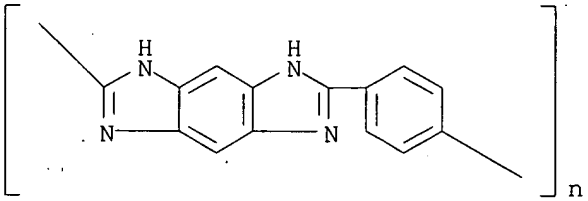
RN 27233-57-4 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-1,3-phenylene] (9CI) (CA INDEX NAME)



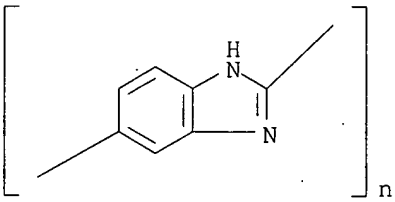
RN 28576-59-2 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1,4-phenylene) (9CI) (CA INDEX NAME)



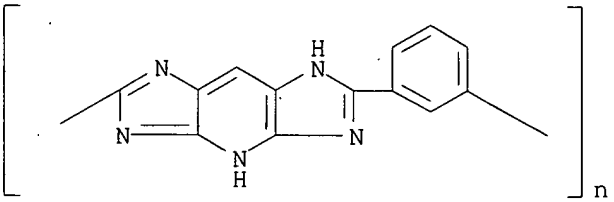
RN 32075-68-6 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-1,4-phenylene] (9CI) (CA INDEX NAME)



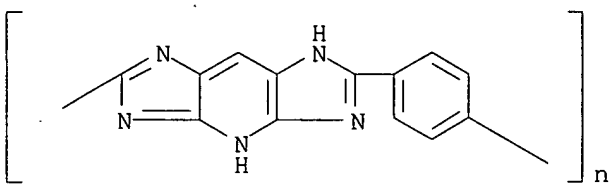
RN 32109-42-5 HCAPLUS
CN Poly(1H-benzimidazole-2,5-diyl) (9CI) (CA INDEX NAME)



RN 42209-07-4 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)-1,3-phenylene] (9CI) (CA INDEX NAME)



RN 55861-56-8 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)-1,4-phenylene] (9CI) (CA INDEX NAME)

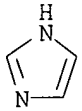


RN 56713-21-4 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diylpyridinediyl) (9CI) (CA INDEX NAME)

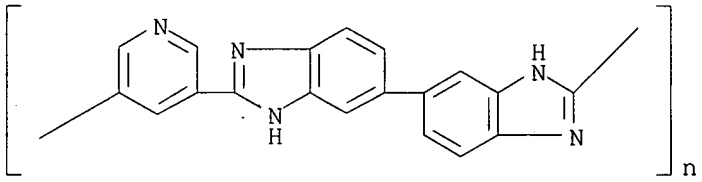
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 82370-43-2 HCAPLUS
CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

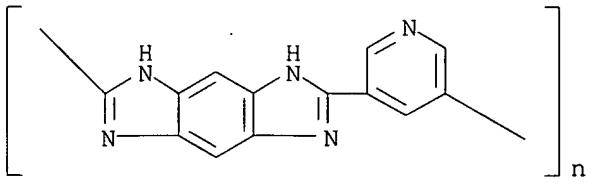
CRN 288-32-4
CMF C3 H4 N2



RN 96926-85-1 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-3,5-pyridinediyl) (9CI) (CA INDEX NAME)

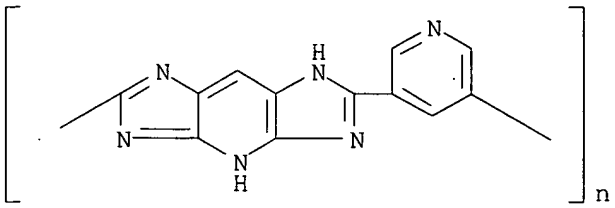


RN 111404-83-2 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-3,5-pyridinediyl] (9CI) (CA INDEX NAME)

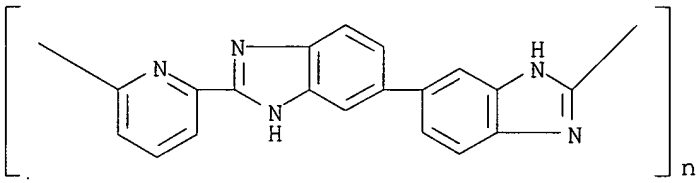


RN 111404-85-4 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)-3,5-

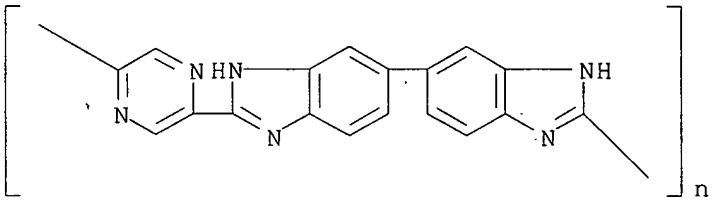
pyridinediyl] (9CI) (CA INDEX NAME)



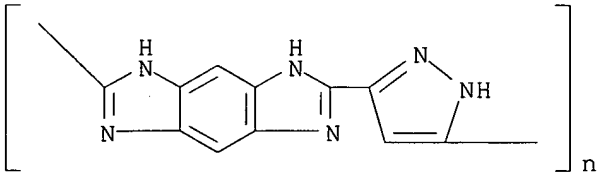
RN 132937-69-0 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-2,6-pyridinediyl) (9CI) (CA INDEX NAME)



RN 240799-37-5 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-2,5-pyrazinediyl) (9CI) (CA INDEX NAME)



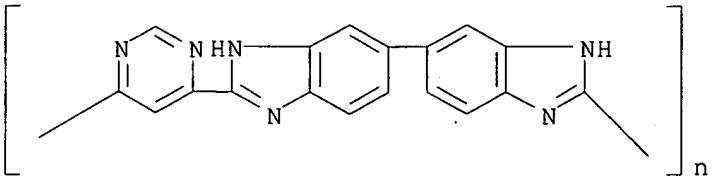
RN 268567-69-7 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-1H-pyrazole-3,5-diyl] (9CI) (CA INDEX NAME)



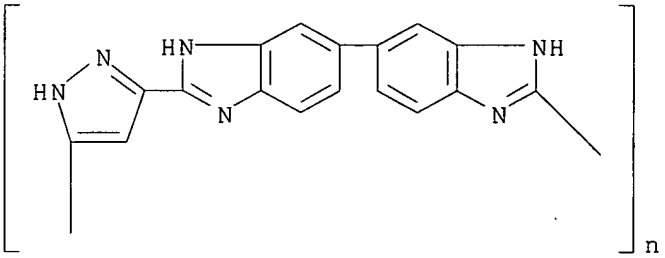
RN 368871-22-1 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)pyridinediyl] (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 471256-97-0 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-4,6-pyrimidinediyl) (9CI) (CA

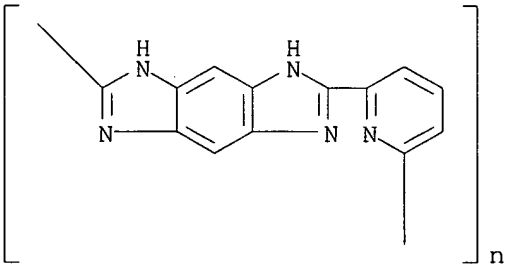
INDEX NAME)



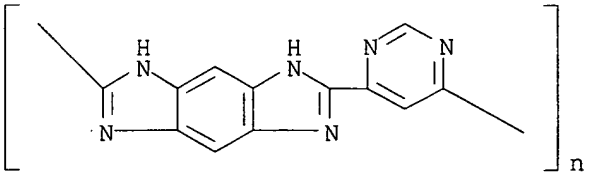
RN 471256-98-1 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1H-pyrazole-3,5-diyl) (9CI) (CA INDEX NAME)



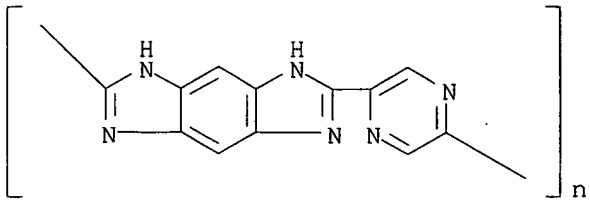
RN 471256-99-2 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-2,6-pyridinediyl] (9CI) (CA INDEX NAME)



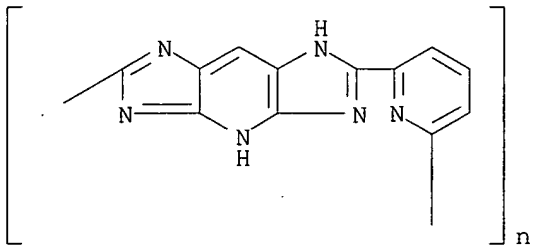
RN 471257-00-8 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-4,6-pyrimidinediyl] (9CI) (CA INDEX NAME)



RN 471257-01-9 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-2,5-pyrazinediyl] (9CI) (CA INDEX NAME)



RN 471257-02-0 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)-2,6-pyridinediyl] (9CI) (CA INDEX NAME)



RN 472960-34-2 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)pyridinediyl] (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L149 ANSWER 27 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2004:36785 HCAPLUS
DN 140:96885
TI **Proton conductive** solid polymer electrolyte for **electrochemical cell**
IN Komiya, Teruaki
PA Honda Giken Kabushiki Kaisha, Japan
SO Eur. Pat. Appl., 14 pp.
CODEN: EPXXDW
DT **Patent**
LA English
FAN.CNT 1

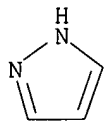
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1381107	A2	20040114	EP 2003-254383	20030710 <--
	EP 1381107	A3	20061115		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
	JP 2004047232	A	20040212	JP 2002-201718	20020710 <--
	US 2004013925	A1	20040122	US 2003-616537	20030709 <--
PRAI	JP 2002-201718	A	20020710 <--		

AB A material such as imidazole (nitrogen-containing heterocyclic compound), which has at least one lone pair, is dispersed in a basic solid polymer such as polybenzimidazole. The mole number of imidazole per g of polybenzimidazole is less than 0.0014 mol, preferably less than 0.0006 mol. The basic solid polymer is impregnated with an acidic inorg. liquid such as phosphoric acid and sulfuric acid to prepare a **proton conductive** solid

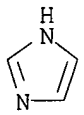
polymer electrolyte.
IC ICM H01M0010-40
ICS H01M0006-18; C08G0073-18
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, **72**
ST **electrochem cell proton conductive** solid polymer electrolyte; **fuel cell proton conductive** solid polymer electrolyte; electrolyzer **proton conductive** solid polymer electrolyte
IT Azines
RL: DEV (Device component use); USES (Uses)
(diazine; **proton conductive** solid polymer electrolyte for **electrochem. cell**)
IT **Heterocyclic compounds**
RL: DEV (Device component use); USES (Uses)
(**nitrogen; proton conductive** solid polymer electrolyte for **electrochem. cell**)
IT **Electrochemical cells**
Electrolytic cells
Fuel cell electrolytes
Solid electrolytes
(**proton conductive** solid polymer electrolyte for **electrochem. cell**)
IT Polybenzimidazoles
RL: DEV (Device component use); USES (Uses)
(**proton conductive** solid polymer electrolyte for **electrochem. cell**)
IT **Ionic conductivity**
(**proton; proton conductive** solid polymer electrolyte for **electrochem. cell**)
IT **Fuel cells**
(solid electrolyte; **proton conductive** solid polymer electrolyte for **electrochem. cell**)
IT 7732-18-5, Water, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(electrolysis; **proton conductive** solid polymer electrolyte for **electrochem. cell**)
IT 91-22-5, Quinoline, uses 110-86-1, Pyridine, uses 119-65-3, IsoQuinoline 120-72-9, Indole, uses 120-73-0, Purine **288-13-1**, Pyrazole **288-32-4**, Imidazole, uses **9002-98-6** **9003-47-8**, Polyvinylpyridine **25232-42-2**, Polyvinylimidazole **25233-30-1** **25823-41-0**, Poly(1-vinylpyrazole) **32109-42-5**, Poly(1H-benzimidazole-2,5-diyl) **50641-39-9** **131714-35-7**
RL: DEV (Device component use); USES (Uses)
(**proton conductive** solid polymer electrolyte for **electrochem. cell**)
IT 7664-38-2, Phosphoric acid, uses 7664-93-9, Sulfuric acid, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**proton conductive** solid polymer electrolyte for **electrochem. cell**)
IT 1333-74-0P, Hydrogen, preparation 7782-44-7P, Oxygen, preparation
RL: SPN (Synthetic preparation); PREP (Preparation)
(**proton conductive** solid polymer electrolyte for **electrochem. cell**)
IT **288-13-1**, Pyrazole **288-32-4**, Imidazole, uses **9002-98-6** **9003-47-8**, Polyvinylpyridine **25232-42-2**, Polyvinylimidazole **25233-30-1**

25823-41-0, Poly(1-vinylpyrazole) **32109-42-5**,
Poly(1H-benzimidazole-2,5-diyl) **50641-39-9 131714-35-7**
RL: DEV (Device component use); USES (Uses)
(**proton conductive** solid polymer electrolyte for
electrochem. cell)

RN 288-13-1 HCAPLUS
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



RN 9002-98-6 HCAPLUS
CN Aziridine, homopolymer (9CI) (CA INDEX NAME)

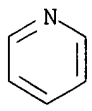
CM 1

CRN 151-56-4
CMF C2 H5 N

RN 9003-47-8 HCAPLUS
CN Pyridine, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1337-81-1
CMF C7 H7 N
CCI IDS



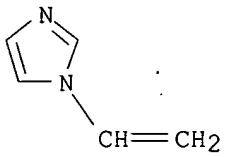
D1—CH═CH_2

RN 25232-42-2 HCAPLUS

CN 1H-Imidazole, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

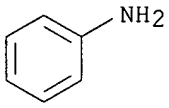
CRN 1072-63-5
CMF C5 H6 N2



RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

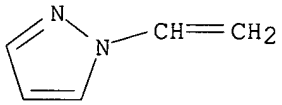
CRN 62-53-3
CMF C6 H7 N



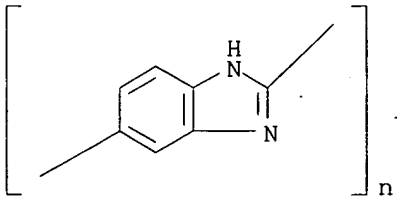
RN 25823-41-0 HCAPLUS
CN 1H-Pyrazole, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 20173-98-2
CMF C5 H6 N2



RN 32109-42-5 HCAPLUS
CN Poly(1H-benzimidazole-2,5-diyl) (9CI) (CA INDEX NAME)



RN 50641-39-9 HCAPLUS

CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diylphenylene) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 131714-35-7 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)phenylene] (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L149 ANSWER 28 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:875559 HCAPLUS
DN 139:367552
TI Multilayered electrolyte-**electrode** membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating
IN Uensal, Oemer; Kiefer, Joachim
PA Celanese Ventures GmbH, Germany; Pemeas GmbH
SO PCT Int. Appl., 49 pp.
CODEN: PIXXD2
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003092090	A2	20031106	WO 2003-EP4117	20030422 <--
	WO 2003092090	A3	20050120		
	W: BR, CA, CN, JP, KR, MX, US				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR				
	DE 10218368	A1	20031106	DE 2002-10218368	20020425 <--
	DE 10218367	A1	20031113	DE 2002-10218367	20020425 <--
	CA 2483015	A1	20031106	CA 2003-2483015	20030422 <--
	EP 1518282	A2	20050330	EP 2003-718780	20030422 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, FI, RO, CY, TR, BG, CZ, EE, HU, SK				
	CN 1650463	A	20050803	CN 2003-809351	20030422 <--
	US 2005181254	A1	20050818	US 2003-512264	20030422 <--
	JP 2005527948	T	20050915	JP 2004-500346	20030422 <--
PRAI	DE 2002-10218367	A	20020425 <--		
	DE 2002-10218368	A	20020425 <--		
	WO 2003-EP4117	W	20030422 <--		

AB **Proton-conducting** multi-layered electrolyte membranes for **fuel cells** are characterized by at least one mineral acid-doped or mineral acid-containing flat surfaces and a barrier layer for the other layer, which, together, make up a membrane **electrode** assembly. Preferred mineral acids include H3PO4, H2SO4, and polyphosphoric acids. The barrier layer, which preferably consists of a cation exchanger with cation-exchange capacity <0.9 meq/g and a **proton conductivity** <0.06 S/cm, has a thickness of 10-30 μm (preferably <10 μm). The flat surfaces of the membrane consist of a basic polymer (or a basic polymer integrated with a second polymer or an inert support), selected from polyimidazoles, polybenzimidazoles, polybenzthiazoles, polybenzoxazoles, polytriazoles, polyoxadiazoles, polythiadiazoles, polypyrazoles, **polyquinoxalines**, polypyridines, polypyrimidines, or poly(tetraazapyrenes). Such multilayer electrolyte membranes prevents mineral acid from being washed out and reduces the overvoltage on the **cathode**.
IC ICM H01M
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38

ST multilayered electrolyte **electrode** membrane **fuel cell**; basic polymer electrolyte **electrode** membrane **fuel cell**; polybenzimidazole electrolyte **electrode** membrane **fuel cell**

IT Polyphosphoric acids
RL: TEM (Technical or engineered material use); USES (Uses)
(membrane assembly containing; multilayered electrolyte-**electrode** membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

IT Polybenzimidazoles
Polybenzothiazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(membranes; multilayered electrolyte-**electrode** membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

IT **Fuel cell electrodes**
Fuel cell electrolytes
Fuel cell separators
(multilayered electrolyte-**electrode** membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

IT Polysulfones, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polyether-, membranes; multilayered electrolyte-**electrode** membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

IT Polyketones
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polyether-, sulfonated, membranes; multilayered electrolyte-**electrode** membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

IT Polyethers, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polyketone-, sulfonated, membranes; multilayered electrolyte-**electrode** membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

IT Polyethers, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polysulfone-, membranes; multilayered electrolyte-**electrode** membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

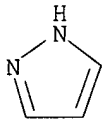
IT 7664-38-2, Phosphoric acid, uses 7664-93-9, Sulfuric acid, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(membrane assembly containing; multilayered electrolyte-**electrode** membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

IT 620168-47-0, Ultrason E 7020P
RL: DEV (Device component use); USES (Uses)
(membranes; multilayered electrolyte-**electrode** membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

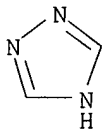
IT 110-86-1D, Pyridine, derivs., polymers **288-13-1D**, Pyrazole, derivs., polymers **288-88-0D**, 1H-1,2,4-Triazole, derivs., polymers 289-06-5D, Thiadiazole, derivs., polymers **289-95-2D**, Pyrimidine, derivs., polymers 7258-75-5D, Pyrimido[4,5,6-gh]perimidine, 1,6-dihydro-, derivs., polymers 27380-27-4D, Pek, sulfonated
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(membranes; multilayered electrolyte-**electrode** membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

IT **288-13-1D**, Pyrazole, derivs., polymers **288-88-0D**, 1H-1,2,4-Triazole, derivs., polymers **289-95-2D**, Pyrimidine, derivs., polymers
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(membranes; multilayered electrolyte-**electrode** membrane assemblies containing mineral acids, basic polymers, and a cation exchange-type barrier coating)

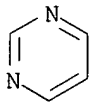
RN 288-13-1 HCAPLUS
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



RN 288-88-0 HCAPLUS
CN 1H-1,2,4-Triazole (7CI, 9CI) (CA INDEX NAME)



RN 289-95-2 HCAPLUS
CN Pyrimidine (8CI, 9CI) (CA INDEX NAME)



L149 ANSWER 29 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:875183 HCAPLUS
DN 139:335066
TI Method and apparatus for plasma deposition of chemically reactive groups on substrates chemically reactive substrates obtainable by the method and use thereof
IN Christensen, Soren Flygenring; Petersen, Steen Guldager
PA NKT Research & Innovation A/s, Den.
SO PCT Int. Appl., 70 pp.
CODEN: PIXXD2

DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003090939	A1	20031106	WO 2003-DK272	20030425 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	AU 2003226956	A1	20031110	AU 2003-226956	20030425 <--
PRAI	DK 2002-637	A	20020425 <--		
	WO 2003-DK272	W	20030425 <--		

AB The present invention relates to a method and apparatus for plasma deposition of a chemical reactive group (Y-Z) on a substrate, chemical reactive substrates, and use thereof, e.g. for immobilization of biomols.; the method comprising: (a) providing at least one precursor (A-X (Y)) for the chemical reactive group; (b) providing at least one donor (D(Z)), said at least one donor comprising at least one addition group (Z), optionally said at least one addition group (Z) being comprised in said precursor (A-X (Y)) and optionally said at least one donor (D(Z)) is not being provided; (c) providing a substrate (M); (d) providing a gas plasma, said gas plasma having a pressure and an energy to form at least one activated carrier group (B); and (e) reacting said substrate (M), said at least one precursor (A-X (Y)), said at least one donor (D(Z)) in said gas plasma so that said chemical reactive group (Y-Z) is bound to said substrate, either directly (M-Y-Z) or via said at least one activated carrier group (M-B-Y-Z), and so that when exposed to a substance which chemical reacts with said chemical reactive group, said substance binds thereto.

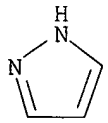
IC ICM B05D0007-24
ICS A61L0033-00; H05H0001-24; H01J0037-32
CC 9-1 (Biochemical Methods)
IT Apparatus
Atoms
Bond
Bond cleavage
Cantilevers (components)
Carbonyl group
Carriers
Containers
Crystals
Electric current
Electric insulators
Electrodes
Energy
Frequency
Gases
Holders
Immobilization, molecular or cellular
Membranes, nonbiological
Pipes and Tubes
Plasma
Plates

Pressure
Reaction
Sensors
Spheres
Sulfhydryl group
Vacuum
Vacuum pumps
Wires
(method and apparatus for plasma deposition of chemical reactive groups on substrates chemical reactive substrates obtainable by the method and use thereof)

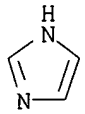
IT 74-82-8, Methane, reactions 75-00-3, Ethyl chloride 75-05-8, Acetonitrile, reactions 75-43-4, Dichlorofluoromethane 75-44-5, Carbonyl chloride 75-69-4, Trichlorofluoromethane 80-62-6, Methyl methacrylate 96-54-8, 1-Methylpyrrole 97-62-1, Ethyl isobutyrate 100-47-0, Benzonitrile, reactions 102-70-5, Triallylamine 107-13-1, Acrylonitrile, reactions 107-47-1, tert-Butyl sulfide 108-29-2, γ-Valerolactone 109-74-0, n-Butanenitrile 109-89-7, Diethylamine, reactions 109-97-7, Pyrrole 110-01-0, Tetrahydrothiophene 110-02-1, Thiophene 110-86-1, Pyridine, reactions 110-89-4, Piperidine, reactions 120-94-5, 1-Methylpyrrolidine 121-44-8, Triethylamine, reactions 123-75-1, Pyrrolidine, reactions 124-02-7, Diallylamine 141-78-6, Ethyl acetate, reactions **288-13-1**, Pyrazole **288-32-4**, Imidazole, reactions **289-95-2**, Pyrimidine 547-63-7, Methyl isobutyrate 554-14-3, 2-Methylthiophene 592-88-1, Allyl sulfide 616-43-3, 3-Methylpyrrole 623-47-2, Ethyl propiolate 625-82-1, 2,4-Dimethylpyrrole 627-37-2, N-Allylmethylamine 638-02-8, 2,5-Dimethylthiophene 922-67-8, Methyl propiolate **1072-63-5**, N-Vinylimidazole 1300-21-6, Dichloroethane 1333-74-0, Hydrogen, reactions 3068-88-0, β-Butyrolactone 7664-41-7, Ammonia, reactions 7704-34-9D, Sulfur, compds. containing 7727-37-9D, Nitrogen, compds. containing 7732-18-5, Water, reactions 7782-44-7D, Oxygen, compds. containing 7782-50-5D, Chlorine, mols. containing 10152-76-8, Allyl methyl sulfide 26446-76-4, Chloropropane 26638-19-7, Dichloropropane
RL: RCT (Reactant); RACT (Reactant or reagent)
(method and apparatus for plasma deposition of chemical reactive groups on substrates chemical reactive substrates obtainable by the method and use thereof)

IT **288-13-1**, Pyrazole **288-32-4**, Imidazole, reactions **289-95-2**, Pyrimidine **1072-63-5**, N-Vinylimidazole
RL: RCT (Reactant); RACT (Reactant or reagent)
(method and apparatus for plasma deposition of chemical reactive groups on substrates chemical reactive substrates obtainable by the method and use thereof)

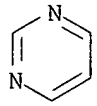
RN 288-13-1 HCAPLUS
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



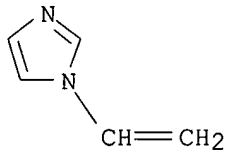
RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



RN 289-95-2 HCAPLUS
CN Pyrimidine (8CI, 9CI) (CA INDEX NAME)



RN 1072-63-5 HCAPLUS
CN 1H-Imidazole, 1-ethenyl- (9CI) (CA INDEX NAME)



RETABLE

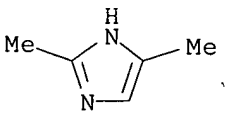
Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Bazylenko, M	1999			WO 9928528 A	HCAPLUS
Glejboel, K	2000			WO 0044207 A	HCAPLUS
Hess, D	1989			US 4863755 A	HCAPLUS
Steele, J	1995			US 5449383 A	HCAPLUS
Timmons, R	1999			US 5876753 A	HCAPLUS
Univ California	2000			WO 0070117 A	HCAPLUS
Zimmermann, H	1996			US 5580384 A	HCAPLUS

L149 ANSWER 30 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:794104 HCAPLUS
DN 139:310014
TI Production of conductive composite particles, conductive molding material, and **fuel cell** separator
IN Fujii, Shunsuke; Hirata, Koji
PA Sumitomo Bakelite Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003288814	A	20031010	JP 2002-88661	20020327 <--
PRAI	JP 2002-88661		20020327 <--		

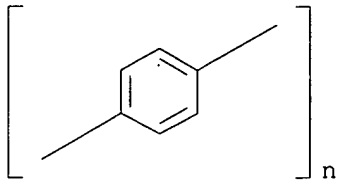
AB The particle comprises conductive C material (e.g. graphite) coated with conductive polymers. The molding material comprises 70-98 weight part of the particle and 2-30 weight part of thermosetting or thermoplastic resins. The product is excellent in molding, mech., and elec. characteristics, and is

suitable for **fuel cell** separators.
IC ICM H01B0005-00
ICS C01B0031-04; C08K0009-04; C08L0101-00; H01B0001-24; H01M0008-02
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 49, 76
ST conductive composite particle molding material **fuel cell** separator
IT Separators
(**fuel cells**; production of conductive composite particles, conductive molding material, and **fuel cell** separator)
IT Conducting polymers
Fuel cells
Molding
(production of conductive composite particles, conductive molding material, and **fuel cell** separator)
IT Epoxy resins, uses
Phenolic resins, uses
Polyanilines
RL: NUU (Other use, unclassified); USES (Uses)
(production of conductive composite particles, conductive molding material, and **fuel cell** separator)
IT Plastics, uses
RL: NUU (Other use, unclassified); USES (Uses)
(thermoplastics; production of conductive composite particles, conductive molding material, and **fuel cell** separator)
IT Plastics, uses
RL: NUU (Other use, unclassified); USES (Uses)
(thermosetting; production of conductive composite particles, conductive molding material, and **fuel cell** separator)
IT **930-62-1**, 1H-Imidazole, 2,4-dimethyl
RL: MOA (Modifier or additive use); USES (Uses)
(production of conductive composite particles, conductive molding material, and **fuel cell** separator)
IT 62-53-3, Aniline, uses 108-95-2, Phenol, uses 7782-42-5, Graphite, uses
RL: NUU (Other use, unclassified); USES (Uses)
(production of conductive composite particles, conductive molding material, and **fuel cell** separator)
IT 557-34-6, Zinc acetate 7446-70-0, Aluminum chloride, reactions 7727-54-0 **25190-62-9**, Poly(1,4-phenylene) 30525-89-4, Paraform aldehyde **30604-81-0**, **Polypyrrole**
RL: RCT (Reactant); RACT (Reactant or reagent)
(production of conductive composite particles, conductive molding material, and **fuel cell** separator)
IT **930-62-1**, 1H-Imidazole, 2,4-dimethyl
RL: MOA (Modifier or additive use); USES (Uses)
(production of conductive composite particles, conductive molding material, and **fuel cell** separator)
RN 930-62-1 HCAPLUS
CN 1H-Imidazole, 2,4-dimethyl- (9CI) (CA INDEX NAME)



IT **25190-62-9**, Poly(1,4-phenylene) **30604-81-0**,

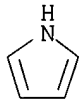
Polypyrrole
RL: RCT (Reactant); RACT (Reactant or reagent)
(production of conductive composite particles, conductive molding material, and **fuel cell** separator)
RN 25190-62-9 HCAPLUS
CN Poly(1,4-phenylene) (9CI) (CA INDEX NAME)



RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 109-97-7
CMF C4 H5 N



L149 ANSWER 31 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:634143 HCAPLUS
DN 139:166974
TI Polymer electrolyte membrane **fuel cell** system including contaminant removal method
IN George, Paul E.; Saunders, James H.; Vijayendran, Bhima
PA Battelle Memorial Institute, USA
SO PCT Int. Appl., 69 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 2

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2003067695	A2	20030814	WO 2003-US3864	20030206 <--
WO 2003067695	A3	20031127		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

AU 2003210939	A1	20030902	AU 2003-210939	20030206 <--

US 2005069735 A1 20050331 US 2004-913293 20040806 <--
PRAI US 2002-354770P P 20020206 <--
WO 2003-US3864 W 20030206 <--

AB The invention relates to a **fuel cell** system comprising: a fuel processor for producing hydrogen from a fuel; and a **fuel cell** stack including a plurality of polymer electrolyte membranes and a plurality of **electrodes**; where the polymer electrolyte membrane comprises a **proton conducting** hydrocarbon-based polymer membrane, the polymer having a backbone and having acidic groups on side chains attached to the backbone. The invention also relates to methods of removing contaminants from the **fuel cell electrode**.

IC ICM H01M0008-04
ICS H01M0008-10

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST polymer electrolyte membrane **fuel cell** system contaminant removal method

IT Reforming apparatus
(fuel; polymer electrolyte membrane **fuel cell** system including contaminant removal method)

IT Oligomers
RL: TEM (Technical or engineered material use); USES (Uses)
(hydrocarbon-based; polymer electrolyte membrane **fuel cell** system including contaminant removal method)

IT Polyketones
Polysulfones, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, sulfonated; polymer electrolyte membrane **fuel cell** system including contaminant removal method)

IT Polyethers, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyketone-, sulfonated; polymer electrolyte membrane **fuel cell** system including contaminant removal method)

IT Algorithm
Fuel cell electrolytes
(polymer electrolyte membrane **fuel cell** system including contaminant removal method)

IT Polymer blends
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymer electrolyte membrane **fuel cell** system including contaminant removal method)

IT Hydrocarbons, uses
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymers; polymer electrolyte membrane **fuel cell** system including contaminant removal method)

IT Polyethers, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfone-, sulfonated; polymer electrolyte membrane **fuel cell** system including contaminant removal method)

IT Fuel gas manufacturing
(reforming; polymer electrolyte membrane **fuel cell** system including contaminant removal method)

IT **Fuel cells**

(solid electrolyte; polymer electrolyte membrane **fuel cell** system including contaminant removal method)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(sulfonated; polymer electrolyte membrane **fuel cell** system including contaminant removal method)

IT 630-08-0, Carbon monoxide, miscellaneous
RL: MSC (Miscellaneous)
(impurity; polymer electrolyte membrane **fuel cell** system including contaminant removal method)

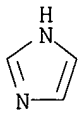
IT 8062-15-5DP, Lignosulfonate, sulfonated 25322-69-4DP, Polypropylene oxide, sulfonated
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymer electrolyte membrane **fuel cell** system including contaminant removal method)

IT 127-19-5, Dimethyl acetamide **288-32-4**, Imidazole, uses 872-50-4, n-Methylpyrrolidone, uses 10294-54-9, Cesium sulfate 12067-99-1, Phosphotungstic acid
RL: MOA (Modifier or additive use); USES (Uses)
(polymer electrolyte membrane **fuel cell** system including contaminant removal method)

IT 1333-74-0P, Hydrogen, uses
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymer electrolyte membrane **fuel cell** system including contaminant removal method)

IT **288-32-4**, Imidazole, uses
RL: MOA (Modifier or additive use); USES (Uses)
(polymer electrolyte membrane **fuel cell** system including contaminant removal method)

RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



L149 ANSWER 32 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:634139 HCAPLUS
DN 139:166971
TI Polymer electrolyte membranes for use in **fuel cells**
IN Vijayendran, Bhima; McGinniss, Vincent D.; Risser, Steven M.; Schulte, Michael D.; Sayre, Jay R.; Cafmeyer, Jeffrey T.
PA Battelle Memorial Institute, USA
SO PCT Int. Appl., 40 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2003067691	A2	20030814	WO 2003-US3862	20030206 <--
WO 2003067691	A3	20031016		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,

CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,
LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,
UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

CA 2475501	A1	20030814	CA 2003-2475501	20030206	<--
AU 2003209080	A1	20030902	AU 2003-209080	20030206	<--
EP 1474839	A2	20041110	EP 2003-707808	20030206	<--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK					
JP 2005531646	T	20051020	JP 2003-566925	20030206	<--
US 2005069745	A1	20050331	US 2004-912590	20040805	<--
PRAI US 2002-354717P	P	20020206	<--		
WO 2003-US3862	W	20030206	<--		

AB This invention relates to a polymer electrolyte membrane comprising a **proton conducting** hydrocarbon-based polymer membrane, the polymer having a backbone and having acidic groups on side chains attached to the backbone. The invention also relates to a polymer electrolyte membrane comprising a **proton conducting** hydrocarbon-based polymer membrane having a phase separated morphol. microstructure. The invention also relates to a polymer electrolyte membrane comprising a **proton conducting** membrane, the membrane comprising a basic material in combination with an acidic material selected from acidic hydrocarbon-based polymers, acidic hydrocarbon-based oligomers, and blends thereof.

IC ICM H01M0008-02

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST polymer electrolyte membrane **fuel cell** use

IT Polymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(aromatic, sulfonated; polymer electrolyte membranes for use in **fuel cells**)

IT Epoxy resins, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(aromatic; polymer electrolyte membranes for use in **fuel cells**)

IT **Fuel cells**
(direct methanol; polymer electrolyte membranes for use in **fuel cells**)

IT Polyoxyalkylenes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(fluorine- and sulfo-containing, ionomers; polymer electrolyte membranes for use in **fuel cells**)

IT Oligomers
RL: TEM (Technical or engineered material use); USES (Uses)
(hydrocarbon-based; polymer electrolyte membranes for use in **fuel cells**)

IT Polymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(inorg., sulfonated; polymer electrolyte membranes for use in **fuel cells**)

IT Cyclosiloxanes
RL: TEM (Technical or engineered material use); USES (Uses)
(pentaglycidyl ethers, Siloxirane; polymer electrolyte membranes for

use in **fuel cells**)

IT Polysulfones, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, sulfonated; polymer electrolyte membranes for use in **fuel cells**)

IT Polyketones
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polyether-, sulfonated; polymer electrolyte membranes for use in **fuel cells**)

IT Polyethers, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polyketone-, sulfonated; polymer electrolyte membranes for use in **fuel cells**)

IT **Fuel cell electrolytes**
Glass transition temperature
Ionic conductivity
(polymer electrolyte membranes for use in **fuel cells**)

IT Polymer blends
RL: TEM (Technical or engineered material use); USES (Uses)
(polymer electrolyte membranes for use in **fuel cells**)

IT Alicyclic compounds
RL: TEM (Technical or engineered material use); USES (Uses)
(polymers. sulfonated; polymer electrolyte membranes for use in **fuel cells**)

IT Hydrocarbons, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polymers; polymer electrolyte membranes for use in **fuel cells**)

IT Fluoropolymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polyoxyalkylene-, sulfo-containing, ionomers; polymer electrolyte membranes for use in **fuel cells**)

IT Ionomers
RL: TEM (Technical or engineered material use); USES (Uses)
(polyoxyalkylenes, fluorine- and sulfo-containing; polymer electrolyte membranes for use in **fuel cells**)

IT Polyethers, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfone-, sulfonated; polymer electrolyte membranes for use in **fuel cells**)

IT **Fuel cells**
(solid electrolyte; polymer electrolyte membranes for use in **fuel cells**)

IT Polymers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(sulfonated, organic hybrid; polymer electrolyte membranes for use in **fuel cells**)

IT Polyoxyphenylenes
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(sulfonated; polymer electrolyte membranes for use in **fuel cells**)

IT 127-19-5, Dimethyl acetamide 872-50-4, n-Methylpyrrolidone, uses
10294-54-9, Cesium sulfate 12067-99-1, Phosphotungstic acid

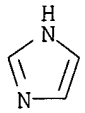
RL: MOA (Modifier or additive use); USES (Uses)
(polymer electrolyte membranes for use in **fuel cells**
)

IT 67-56-1, Methanol, uses **288-32-4**, Imidazole, uses
288-32-4D, Imidazole, substituted 584-08-7, Potassium carbonate
7447-41-8, Lithium chloride (LiCl), uses 7647-14-5, Sodium chloride,
uses 7778-80-5, Potassium sulfate, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polymer electrolyte membranes for use in **fuel cells**
)

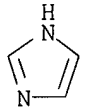
IT 8062-15-5, Lignosulfonate
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(resins, sulfonated; polymer electrolyte membranes for use in
fuel cells)

IT **288-32-4**, Imidazole, uses **288-32-4D**, Imidazole,
substituted
RL: TEM (Technical or engineered material use); USES (Uses)
(polymer electrolyte membranes for use in **fuel cells**
)

RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



L149 ANSWER 33 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:591393 HCAPLUS
DN 139:150738
TI Acid-base **proton conducting** polymer blend membrane for
fuel cells
IN Nam, Kiehyun; Xu, Helen; Cao, Shuguang; Olmeijer, David; Servaites, Jon;
Wang, Ying
PA Polyfuel, Inc., USA
SO PCT Int. Appl., 38 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2003062493	A1	20030731	WO 2003-US2361	20030123 <--

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR,

LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH,
PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ,
UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY,
KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES,
FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF,
BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

CA 2473907	A1	20030731	CA 2003-2473907	20030123	<--
US 2003219640	A1	20031127	US 2003-351257	20030123	<--
EP 1476589	A1	20041117	EP 2003-705924	20030123	<--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK					
JP 2006508493	T	20060309	JP 2003-562356	20030123	<--
PRAI US 2002-351445P	P	20020123	<--		
WO 2003-US2361	W	20030123	<--		

AB The acid-base **proton conducting** polymer blend membrane comprises a first acidic polymer having acidic subunits, a second basic polymer having basic subunits, and a third polymer containing one or more functional units for improving membrane **conductivity**, flexibility, water remaining ability, dimension stability, and methanol crossover. In one embodiment, the acid-base polymer blend membrane of the present invention comprises a first acidic polymer having acidic subunits, a second basic polymer having basic subunits, wherein at least one of the first acidic and second basic polymer comprises one or more functional units to improve the properties of the membrane. The functional units include hydrophilic units, adhesion promoter units, methanol block units, dimensional stabilizer units, and flexible units. Optionally, interpenetrating polymer networks are added to the blends to improve the membrane dimensional stability, and rubbers are optionally added to the blends to improve the membrane mech. properties and reduce methanol permeability. A typical membrane was manufactured by adding 0.2 g NH3 to 12 g AcNMe2 containing 0.7 g sulfonated PEEK, adding 0.3 g styrene-4-vinylpyridine block copolymer (number-average mol. weight vinylpyridine block 80,000, number-average mol. weight styrene block 160,000), casting, drying, soaking 16 h in 1.5 M H2SO4, and rinsing in water.

IC ICM C25B0001-02
ICS C25B0013-08; H01M0008-10

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): **52**

ST acid base **proton conducting** polymer blend membrane **fuel cell**; styrene vinylpyridine block copolymer blend **proton conducting** membrane; ammonium sulfonated PEEK blend acid base **proton conducting** membrane

IT Polymer blends
RL: TEM (Technical or engineered material use); USES (Uses)
(acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT Synthetic rubber, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(acrylonitrile, mech.-property improving component; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT Polybenzimidazoles
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(base polymer; acid-base **proton conducting** polymer

blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT Silicone rubber, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(di-Me, aminopropyl group-terminated, mech.-property improving component; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT Fluoro rubber
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(hexafluoropropene-vinylidene fluoride, Kynar Flex, mech.-property improving component; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT Interpenetrating polymer networks
(mech.-property improving component; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT Synthetic rubber, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(phosphazene, trifluoroethoxy, mech.-property improving component; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT Polysulfones, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polyether-, acid polymer; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT Polyimides, uses
Polysulfones, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polyether-, sulfonated, acid polymer; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT Polyketones
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polyether-, sulfonated, ammonium salts, acid polymer; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT Polyethers, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polyimide-, sulfonated, acid polymer; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT Polyethers, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)

(polyketone-, sulfonated, ammonium salts, acid polymer; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT Polyethers, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polysulfone-, acid polymer; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT Polyethers, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(polysulfone-, sulfonated, acid polymer; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT Ionic **conductors**
(**proton**; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT Fluoropolymers, uses
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(rubber, mech.-property improving component; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT **Fuel cells**
(solid electrolyte, **proton**-exchange membranes; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT Fluoro rubber
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(vinylidene fluoride, mech.-property improving component; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT 97917-34-5, A 12
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(DMS-A 12, mech.-property improving component; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT 31694-16-3D, PEEK, sulfonated, ammonium salts
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(acid polymer; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT 67-56-1, Methanol, miscellaneous
RL: MSC (Miscellaneous)
(acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT 9003-53-6, Polystyrene

RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(addnl. hydrophobic component; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT **9003-47-8**, Polyvinylpyridine **25232-42-2**, Polyvinylimidazole 32236-74-1, Acrylonitrile-4-vinylpyridine copolymer 69638-75-1, Acrylic acid-styrene-4-vinylpyridine copolymer 107082-95-1, Styrene-4-vinylpyridine block copolymer
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(base polymer; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT **9003-39-8**, PVP 25086-29-7, Styrene-vinylpyrrolidone copolymer 25086-89-9, Vinyl acetate-vinylpyrrolidone copolymer 25189-55-3, Poly-N-isopropylacrylamide 25249-16-5, Poly-2-hydroxyethyl methacrylate 29297-55-0, N-Vinylimidazole-N-vinylpyrrolidone copolymer 30581-59-0, Dimethylaminoethyl methacrylate-vinylpyrrolidone copolymer 31261-19-5, Acrylonitrile-N-isopropylacrylamide copolymer 36521-72-9, Vinyl acetate-vinyl alcohol-N-vinylpyrrolidone copolymer 200216-54-2, Acrylonitrile-vinylimidazole copolymer
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(hydrophilic component; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT 24968-99-8, Polyvinyl cinnamate
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(mech.-property improving component; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT 78-10-4, TEOS 681-84-5, TMOS
RL: TEM (Technical or engineered material use); USES (Uses)
(mech.-property improving component; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT 9002-89-5, Polyvinyl alcohol 9003-20-7, Polyvinyl acetate 24937-78-8, EVA 25213-24-5, Vinyl acetate-vinyl alcohol copolymer 37203-28-4, Vinyl acetate-vinylpyridine copolymer 61318-17-0, Vinyl alcohol-vinylpyridine copolymer 570394-13-7, Vinyl alcohol-vinyl acetate-vinylpyridine copolymer
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(methanol-blocking component; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

IT 9011-17-0, Hexafluoropropylene-vinylidene fluoride copolymer 24937-79-9, Polyvinylidene fluoride 25014-41-9, PAN 28212-50-2, Polybis(trifluoroethoxy)phosphazene
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(rubber, mech.-property improving component; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel**

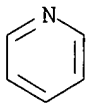
cells)

IT **9003-47-8**, Polyvinylpyridine **25232-42-2**, Polyvinylimidazole
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(base polymer; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

RN 9003-47-8 HCAPLUS
CN Pyridine, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1337-81-1
CMF C7 H7 N
CCI IDS

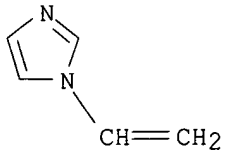


D1—CH═CH2

RN 25232-42-2 HCAPLUS
CN 1H-Imidazole, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1072-63-5
CMF C5 H6 N2

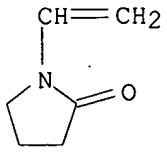


IT **9003-39-8**, PVP
RL: POF (Polymer in formulation); TEM (Technical or engineered material use); USES (Uses)
(hydrophilic component; acid-base **proton conducting** polymer blend membrane with good mech. properties, hydrophilicity, and decreased methanol permeability for **fuel cells**)

RN 9003-39-8 HCAPLUS
CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 88-12-0
CMF C6 H9 N O



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
de Nora	1981			US 4295952 A	HCAPLUS
Formato	2001			US 6248469 B1	HCAPLUS
Prakash	2002			US 6444343 B1	HCAPLUS
Zupncic	1987			US 4664761 A	HCAPLUS

L149 ANSWER 34 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:454898 HCAPLUS
DN 139:39126
TI Nonaqueous electrolytes for lithium primary and secondary **batteries**
IN Barbarich, Thomas J.
PA Yardney Technical Products, Inc., USA
SO U.S. Pat. Appl. Publ., 15 pp.
CODEN: USXXCO
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2003108800	A1	20030612	US 2002-289784	20021107 <--
	US 6852446	B2	20050208		
PRAI	US 2001-347083P	P	20011109 <--		

OS MARPAT 139:39126
AB A nonaq. elec. current producing **electrochem. cell** is provided comprising an **anode** and a **cathode**, an ionically permeable separator interposed between the **anode** and the **cathode**, and a nonaq. electrolyte, the electrolyte comprising an ionically conducting salt in a nonaq. medium, the ionically conducting salt corresponding to the formula: M+(Z*(J*)j(X*)x)-, wherein: M is a lithium atom, Z* is an anion group containing two or more Lewis basic sites and comprising less than 50 atoms not including hydrogen atoms, J* independently each occurrence is a Lewis acid coordinated to at least one Lewis basic site of Z*, and optionally two or more such J* groups may be joined together in a moiety having multiple Lewis acidic functionality, X* independently each occurrence is selected from the group consisting of H, C1-4 alkyl, alkoxide, halide and mixts. thereof, j is an integer from 2 to 12, and x is an integer from 0 to 4.
IC ICM H01M0010-40
ICS H01M0004-58; H01M0004-60
INCL 429324000; 429231950; 429231400; 429213000; 429303000; 429307000; 429338000; 429342000; 429332000; 429333000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium **battery** nonaq electrolyte
IT Polymers, uses
RL: DEV (Device component use); USES (Uses)
(gels; nonaq. electrolytes for lithium primary and secondary **batteries**)
IT Chalcogenides
Oxides (inorganic), uses

RL: DEV (Device component use); USES (Uses)
(lithiated; nonaq. electrolytes for lithium primary and secondary **batteries**)

IT **Primary batteries**
Secondary batteries
(lithium; nonaq. electrolytes for lithium primary and secondary **batteries**)

IT Glass, uses
RL: DEV (Device component use); USES (Uses)
(membrane; nonaq. electrolytes for lithium primary and secondary **batteries**)

IT **Battery electrolytes**
Ionic conductivity
Polar solvents
(nonaq. electrolytes for lithium primary and secondary **batteries**)

IT Esters, uses
Ethers, uses
Lactones
Nitriles, uses
Polyanilines
Sulfones
Transition metal chalcogenides
Transition metal oxides
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolytes for lithium primary and secondary **batteries**)

IT Disulfides
RL: DEV (Device component use); USES (Uses)
(organic, redox polymers; nonaq. electrolytes for lithium primary and secondary **batteries**)

IT Transition metal compounds
RL: DEV (Device component use); USES (Uses)
(oxysulfides; nonaq. electrolytes for lithium primary and secondary **batteries**)

IT Lithium alloy, base
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolytes for lithium primary and secondary **batteries**)

IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); USES (Uses)
(mesocarbon microbeads; nonaq. electrolytes for lithium primary and secondary **batteries**)

IT 57-12-5, Cyanide, uses 60-29-7, Diethyl ether, uses 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 105-58-8, Diethyl carbonate 108-32-7, Propylene carbonate 109-99-9, Thf, uses 110-71-4, 1,2-Dimethoxyethane 120-73-0D, Purine, derivs. 504-66-5D, Dicyanamide, derivs. 616-38-6, Dimethyl carbonate 623-53-0, Ethyl methyl carbonate 646-06-0, Dioxolane 7439-93-2, Lithium, uses 7439-93-2D, Lithium, intercalation compound 14343-69-2, Azide 17655-31-1, Amide 17997-24-9D, Methanetricarbonitrile, ion(1-), derivs. **25233-30-1**, **Polyaniline** 25948-29-2, Carbon disulfide homopolymer 28737-40-8D, Squarate ion(2-), derivs. 32178-55-5D, Benzimidazolide, derivs. 34512-21-5D, derivs. **36954-03-7D**, Imidazole anion, derivs. 39448-96-9, Graphite lithium **51719-91-6D**, derivs. **64544-32-7D**, derivs. 68146-66-7D, derivs. 81425-01-6D, derivs. 217309-42-7, Copper lithium nickel oxide Cu0.2LiNi0.8O2 261356-47-2D, Borate(1-), tetrakis(cyano-κC)-, derivs. 519040-72-3 527685-88-7 527685-89-8 527685-90-1 527685-91-2 527685-92-3 527685-93-4 527685-94-5 527685-95-6

527685-96-7 527685-98-9 527686-01-7 527686-04-0 527686-06-2
527686-08-4 541502-73-2D, derivs. 541502-74-3D, derivs.
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolytes for lithium primary and secondary **batteries**)

IT 55986-39-5P, Lithium imidazolide 148505-26-4P 464194-97-6P
519040-73-4P 519040-74-5P 519040-75-6P 527685-86-5P 527685-87-6P
527686-13-1P 527686-16-4P
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); PREP (Preparation); USES (Uses)
(nonaq. electrolytes for lithium primary and secondary **batteries**)

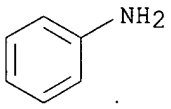
IT 9002-88-4, Polyethylene
RL: DEV (Device component use); USES (Uses)
(separator; nonaq. electrolytes for lithium primary and secondary **batteries**)

IT **25233-30-1, Polyaniline 36954-03-7D**, Imidazole anion, derivs. **51719-91-6D**, derivs. **64544-32-7D**, derivs.
RL: DEV (Device component use); USES (Uses)
(nonaq. electrolytes for lithium primary and secondary **batteries**)

RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

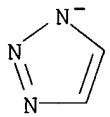
CM 1

CRN 62-53-3
CMF C6 H7 N

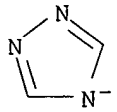


RN 36954-03-7 HCAPLUS
CN 1H-Imidazole, ion(1-) (9CI) (CA INDEX NAME)

RN 51719-91-6 HCAPLUS
CN 1H-1,2,3-Triazole, ion(1-) (9CI) (CA INDEX NAME)



RN 64544-32-7 HCAPLUS
CN 1H-1,2,4-Triazole, ion(1-) (9CI) (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	2002			JP 2002260734	HCAPLUS
LaPointe	2002			US 6395671 B2	HCAPLUS
Lapointe	2000	122	9560	J. Am. Chem. Soc.	HCAPLUS
Lee	2000			US 6022643 A	HCAPLUS
Lee	1998	145	2813	J. Electrochem. Soc.	HCAPLUS
Sun	1999	146	3655	Journal of the Elect	HCAPLUS

L149 ANSWER 35 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:406546 HCAPLUS
DN 138:404317
TI Procedure for fabrication of **proton-conductive** electrolyte membrane for **fuel cell**
IN Melzner, Dieter; Kiel, Suzana; Maehr, Ulrich; Reiche, Annette
PA Sartorius AG, Germany
SO Ger. Offen., 12 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10155543	A1	20030528	DE 2001-10155543	20011112 <--
	DE 10155543	C2	20031113		
	DE 20217178	U1	20030430	DE 2002-20217178	20021107 <--
	WO 2003043116	A1	20030522	WO 2002-EP12461	20021107 <--
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	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	EP 1451887	A1	20040901	EP 2002-785374	20021107 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
	JP 2005509695	T	20050414	JP 2003-544837	20021107 <--
	US 2005118476	A1	20050602	US 2003-495222	20021107 <--
	CN 1650462	A	20050803	CN 2002-821859	20021107 <--
PRAI	DE 2001-10155543	IA	20011112 <--		
	DE 2001-10155545	IA	20011112 <--		
	WO 2002-EP12461	W	20021107 <--		

AB A **proton-conductive** electrolyte membrane comprises at least a base material and at least one dopant, which is the reaction product of at least one dibasic inorg. acid with an organic compound, which contains an acidic hydroxyl group, or is a condensation product of this

compound with a multibasic acid. The electrolyte membrane can be prepared in a single-stage procedure, whereby dangerous and polluting materials can be avoided. Addnl., doping the membrane, e.g. in the context of the membrane-**electrode**-assembly is not impossible. The electrolyte membrane contains a high and a constant mech. stability and flexibility, excellent chemical and thermal stability and a high constant **conductivity** The membrane can be inserted in a **fuel cell** in a wide temperature range from e.g., 50° to >200°, whereby the **fuel cell** shows a high and a constant efficiency over the entire temperature range.

IC ICM H01M0008-02
ICS C08J0005-22; C08G0061-12

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **fuel cell proton conductive** electrolyte membrane fabrication

IT Alcohols, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(aliphatic, C5-20; procedure for fabrication of **proton-conductive** electrolyte membrane for **fuel cell**)

IT Alcohols, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(aralkyl; procedure for fabrication of **proton-conductive** electrolyte membrane for **fuel cell**)

IT Ceramics
Fuel cell electrolytes
(procedure for fabrication of **proton-conductive** electrolyte membrane for **fuel cell**)

IT Epoxides
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(procedure for fabrication of **proton-conductive** electrolyte membrane for **fuel cell**)

IT Polybenzimidazoles
Polybenzothiazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: DEV (Device component use); USES (Uses)
(procedure for fabrication of **proton-conductive** electrolyte membrane for **fuel cell**)

IT **Fuel cells**
(solid electrolyte; procedure for fabrication of **proton-conductive** electrolyte membrane for **fuel cell**)

IT 104-76-7, 2-Ethylhexanol 108-95-2, Phenol, processes 298-07-7, Phosphoric acid, bis(2-ethylhexyl) ester 838-85-7, Phosphoric acid, diphenyl ester 2425-79-8, 1,4-Butanediol diglycidyl ether 7664-38-2, Phosphoric acid, processes 7664-93-9, Sulfuric acid, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(procedure for fabrication of **proton-conductive** electrolyte membrane for **fuel cell**)

IT 67-68-5, Dmso, uses 68-12-2, Dmf, uses 127-19-5, Dimethyl acetamide 129-00-0D, Pyrene, tetraaza derivs., polymers 872-50-4,

n-Methylpyrrolidone, uses **25013-01-8**, Polypyridine **82370-43-2**, Polyimidazole **128611-69-8**, 1,3,4-Thiadiazole homopolymer **190201-51-5**, Pyrimidine homopolymer
RL: DEV (Device component use); USES (Uses)
(procedure for fabrication of **proton-conductive** electrolyte membrane for **fuel cell**)

IT **25013-01-8**, Polypyridine **82370-43-2**, Polyimidazole **128611-69-8**, 1,3,4-Thiadiazole homopolymer **190201-51-5**, Pyrimidine homopolymer
RL: DEV (Device component use); USES (Uses)
(procedure for fabrication of **proton-conductive** electrolyte membrane for **fuel cell**)

RN 25013-01-8 HCAPLUS
CN Pyridine, homopolymer (9CI) (CA INDEX NAME)

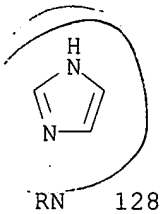
CM 1

CRN 110-86-1
CMF C5 H5 N

RN 82370-43-2 HCAPLUS
CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

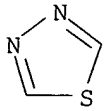
CRN 288-32-4
CMF C3 H4 N2



RN 128611-69-8 HCAPLUS
CN 1,3,4-Thiadiazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

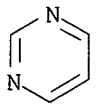
CRN 289-06-5
CMF C2 H2 N2 S



RN 190201-51-5 HCAPLUS
CN Pyrimidine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 289-95-2
CMF C4 H4 N2



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon				WO 0118894 A2	HCAPLUS
Anon				US 4814399 A	HCAPLUS
Anon				US 5525436 A	HCAPLUS

L149 ANSWER 36 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:396602 HCAPLUS
DN 138:388180
TI Method of fabrication of **proton-conductive** polymer electrolyte membrane for **fuel cell**
IN Melzner, Dieter; Kiel, Suzana; Maehr, Ulrich; Reiche, Annette
PA Sartorius A.-G., Germany
SO Ger. Offen., 12 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10155545	A1	20030522	DE 2001-10155545	20011112 <--
	DE 20217178	U1	20030430	DE 2002-20217178	20021107 <--
	WO 2003043116	A1	20030522	WO 2002-EP12461	20021107 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	EP 1451887	A1	20040901	EP 2002-785374	20021107 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK				
	JP 2005509695	T	20050414	JP 2003-544837	20021107 <--
	CN 1650462	A	20050803	CN 2002-821859	20021107 <--
PRAI	DE 2001-10155543	IA	20011112 <--		
	DE 2001-10155545	IA	20011112 <--		
	WO 2002-EP12461	W	20021107 <--		

AB A **proton-conductive** polymer electrolyte membrane comprises ≥1 basic polymer and ≥1 dopant, which are the reaction product of ≥1 dibasic inorg. acid with an organic compound, whereby the reaction product contains an unreacted acid hydroxyl group. The electrolyte membrane can be fabricated in a single-stage procedure, by

avoiding dangerous and polluting materials. The electrolyte membrane contains a high and a constant mech. stability and flexibility, excellent chemical and thermal stability and a high constant **conductivity** The membrane can be used in a **fuel cell** in a wide temperature range of, e.g., 50° to >200°, whereby the **fuel cell** shows a high and a constant efficiency over the entire temperature range.

IC ICM H01M0008-02
ICS C08J0005-22; C08G0061-12

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **fuel cell proton conductive** polymer electrolyte membrane

IT Amines, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(aliphatic, C5-20, substituted or unsubstituted; method of fabrication of **proton-conductive** polymer electrolyte membrane for **fuel cell**)

IT Alcohols, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(aliphatic, C5-20; method of fabrication of **proton-conductive** polymer electrolyte membrane for **fuel cell**)

IT Alcohols, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(aralkyl, substituted or unsubstituted; method of fabrication of **proton-conductive** polymer electrolyte membrane for **fuel cell**)

IT Amines, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(aromatic; method of fabrication of **proton-conductive** polymer electrolyte membrane for **fuel cell**)

IT **Fuel cell electrolytes**
(method of fabrication of **proton-conductive** polymer electrolyte membrane for **fuel cell**)

IT Polybenzimidazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(method of fabrication of **proton-conductive** polymer electrolyte membrane for **fuel cell**)

IT **Fuel cells**
(solid electrolyte; method of fabrication of **proton-conductive** polymer electrolyte membrane for **fuel cell**)

IT 104-76-7, 2-Ethylhexanol 108-95-2, Phenol, processes 298-07-7, Di(2-ethylhexyl)phosphate 838-85-7, Diphenyl phosphate 2425-79-8, 1,4-Butanediol diglycidyl ether 7664-38-2, Phosphoric acid, processes 7664-93-9, Sulfuric acid, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(method of fabrication of **proton-conductive** polymer electrolyte membrane for **fuel cell**)

IT **25013-01-8**, Polypyridine **31346-56-2 82370-43-2**
, Polyimidazole **128611-69-8**, 1,3,4-Thiadiazole homopolymer
190201-51-5, Pyrimidine homopolymer
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(method of fabrication of **proton-conductive** polymer electrolyte membrane for **fuel cell**)

IT 67-68-5, Dmso, uses 68-12-2, Dmf, uses 127-19-5, Dimethylacetamide
872-50-4, n-Methylpyrrolidone, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(method of fabrication of **proton-conductive** polymer electrolyte membrane for **fuel cell**)

IT **25013-01-8**, Polypyridine **31346-56-2 82370-43-2**
, Polyimidazole **128611-69-8**, 1,3,4-Thiadiazole homopolymer
190201-51-5, Pyrimidine homopolymer
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(method of fabrication of **proton-conductive** polymer electrolyte membrane for **fuel cell**)

RN 25013-01-8 HCAPLUS
CN Pyridine, homopolymer (9CI) (CA INDEX NAME)

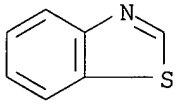
CM 1

CRN 110-86-1
CMF C5 H5 N

RN 31346-56-2 HCAPLUS
CN Benzothiazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

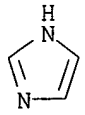
CRN 95-16-9
CMF C7 H5 N S



RN 82370-43-2 HCAPLUS
CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 288-32-4
CMF C3 H4 N2



RN 128611-69-8 HCAPLUS
CN 1,3,4-Thiadiazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 289-06-5
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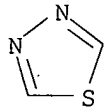

RN 190201-51-5 HCAPLUS
CN Pyrimidine, homopolymer (9CI) (CA INDEX NAME)

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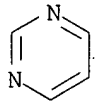
CRN 289-95-2
CMF C4 H4 N2



L149 ANSWER 37 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:317752 HCAPLUS
DN 138:341083
TI Electrolyte solution and **electrochemical cell** using the solution
IN Shinoda, Tomoki; **Nishiyama, Toshihiko**; Kamito, Hiroyuki; Harada, Manabu; **Kurosaki, Masato**; **Nakagawa, Yuji**; **Kaneko, Shinako**; Mitani, Katsuya
PA **NEC Tokin** Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003123834	A	20030425	JP 2001-319390	20011017 <--
	EP 1309028	A2	20030507	EP 2002-292430	20021003 <--
	EP 1309028	A3	20040602		
	EP 1309028	B1	20061018		

R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, SK

	TW 564566	B	20031201	TW 2002-91123248	20021008 <--
	US 2003091905	A1	20030515	US 2002-271636	20021015 <--
	US 6869731	B2	20050322		
	CN 1412225	A	20030423	CN 2002-147593	20021017 <--
	HK 1053850	A1	20060428	HK 2003-106102	20030826 <--
	US 2005135045	A1	20050623	US 2005-50958	20050204 <--
	US 7082027	B2	20060725		
PRAI	JP 2001-319390	A	20011017 <--		
	US 2002-271636	A3	20021015 <--		

OS MARPAT 138:341083

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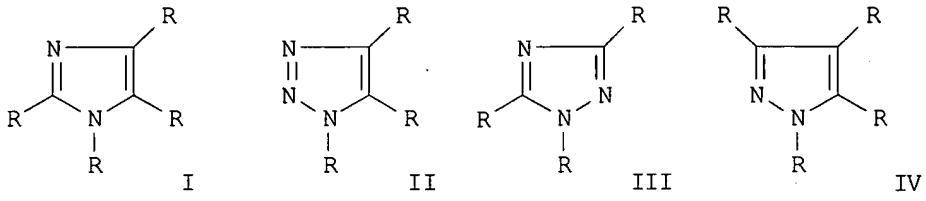


I II III IV

AB The electrolyte solution contains a water soluble heterocyclic N compound in an aqueous solution of an org or inorg acid. The heterocyclic compound is selected from I-IV, where the R's are selected from H, C1-4 alkyl, amino, carboxy, nitro, Ph, vinyl, acyl, cyano, CF3-, alkylsulfonyl, and CF3S- groups and halogen. The **electrochem. cell** is a secondary **battery** or a double layer capacitor.

IC ICM H01M0010-36
ICS H01G0009-038; H01M0004-60; H01M0010-40

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST secondary **battery** electrolyte soln heterocyclic nitrogen compd; double layer capacitor electrolyte soln heterocyclic nitrogen compd

IT **Battery electrolytes**
(aqueous acid electrolyte solns. containing heterocyclic nitrogen compds. for secondary **batteries**)

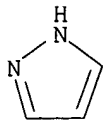
IT 7664-93-9, Sulfuric acid, uses
RL: DEV (Device component use); USES (Uses)
(aqueous acid electrolyte solns. containing heterocyclic nitrogen compds. for secondary **batteries** and double layer capacitors)

IT **288-13-1**, Pyrazole **288-32-4**, Imidazole, uses **20154-03-4**, 3-Trifluoromethylpyrazole 37306-44-8, Triazole
RL: MOA (Modifier or additive use); USES (Uses)
(aqueous acid electrolyte solns. containing heterocyclic nitrogen compds. for secondary **batteries** and double layer capacitors)

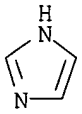
IT **288-13-1**, Pyrazole **288-32-4**, Imidazole, uses **20154-03-4**, 3-Trifluoromethylpyrazole
RL: MOA (Modifier or additive use); USES (Uses)
(aqueous acid electrolyte solns. containing heterocyclic nitrogen compds. for secondary **batteries** and double layer capacitors)

RN 288-13-1 HCAPLUS

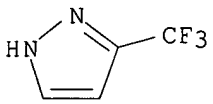
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



RN 20154-03-4 HCAPLUS
CN 1H-Pyrazole, 3-(trifluoromethyl)- (9CI) (CA INDEX NAME)



L149 ANSWER 38 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:300775 HCAPLUS
DN 138:290461
TI Secondary lithium **batteries** using lithium nickel manganese oxide **cathodes**
IN Okada, Mikio
PA Japan Storage Battery Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 10 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2003115324	A	20030418	JP 2001-308766	20011004 <--
PRAI	JP 2001-308766		20011004 <--		

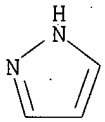
AB The **batteries** comprise LixNiyMn2-yO4 (x = 0-1 y = 0.45-0.6) as **cathodes**, carbonaceous **anodes**, and nonaq. electrolytes; wherein nitrogen-containing unsatd. cyclic compds. are included in the electrolytes to improve charge-discharge cycling performance. A part of Ni or Mn in the compound oxides may have been substituted with Co, Fe, Zn, Al, or V.
IC ICM H01M0010-40
ICS H01M0004-02; H01M0004-58; H01M0004-62
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium **battery** electrolyte nitrogen unsatd heterocycle additive
IT **Battery cathodes**
Battery electrolytes
Secondary batteries
(secondary lithium **batteries** using lithium nickel manganese oxide **cathodes** and containing nitrogen-containing unsatd. heterocyclic additives in electrolytes)

IT 12031-75-3, Lithium manganese nickel oxide (LiMn1.5Ni0.5O4) 444727-97-3, Lithium manganese nickel oxide (Li0-1Mn1.4-1.55Ni0.45-0.6O4)
RL: TEM (Technical or engineered material use); USES (Uses)
(**cathodes**; secondary lithium **batteries** using lithium nickel manganese oxide **cathodes** and containing nitrogen-containing unsatd. heterocyclic additives in electrolytes)

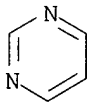
IT 108-47-4, 2,4-Dimethylpyridine 108-48-5, 2,6-Dimethylpyridine 109-97-7, Pyrrole 110-86-1, Pyridine, uses 120-73-0, Purine **288-13-1**, Pyrazole 289-80-5, Pyridazine **289-95-2**, Pyrimidine 290-37-9, Pyrazine 372-47-4, 3-Fluoropyridine 372-48-5, 2-Fluoropyridine 583-58-4, 3,4-Dimethylpyridine 583-61-9, 2,3-Dimethylpyridine 589-93-5, 2,5-Dimethylpyridine 591-22-0, 3,5-Dimethylpyridine 5453-67-8, Dimethyl-2,6-pyridine dicarboxylate 6269-24-5, Methyl-3-pyridyl carbamate 36118-45-3, Pyrazoline 39455-90-8, Pyrazolone 67242-59-5, N-Methyl-N-(2-pyridyl)formamide
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(electrolyte additive; secondary lithium **batteries** using lithium nickel manganese oxide **cathodes** and containing nitrogen-containing unsatd. heterocyclic additives in electrolytes)

IT **288-13-1**, Pyrazole **289-95-2**, Pyrimidine
RL: MOA (Modifier or additive use); TEM (Technical or engineered material use); USES (Uses)
(electrolyte additive; secondary lithium **batteries** using lithium nickel manganese oxide **cathodes** and containing nitrogen-containing unsatd. heterocyclic additives in electrolytes)

RN 288-13-1 HCAPLUS
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



RN 289-95-2 HCAPLUS
CN Pyrimidine (8CI, 9CI) (CA INDEX NAME)



L149 ANSWER 39 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:58413 HCAPLUS
DN 138:109605
TI Method for producing a plasma-polymerized polymer electrolyte membrane and a polyazole membrane coated by plasma-polymerization
IN Mueller, Joerg; Mex, Laurent
PA Germany
SO PCT Int. Appl., 42 pp.
CODEN: PIXXD2
DT **Patent**
LA German
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE

PI	WO 2003007411	A2	20030123	WO 2002-EP7734	20020711 <--
	WO 2003007411	A3	20041104		
	W: AU, BR, CA, CN, IL, JP, KR, MX, US				
	RW: AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR				
	DE 10133738	A1	20030206	DE 2001-10133738	20010711 <--
	CA 2448447	A1	20030123	CA 2002-2448447	20020711 <--
	EP 1497882	A2	20050119	EP 2002-762348	20020711 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR, BG, CZ, EE, SK				
	JP 2005520001	T	20050707	JP 2003-513069	20020711 <--
	US 2004186189	A1	20040923	US 2003-482354	20031229 <--
PRAI	DE 2001-10133738	A	20010711 <--		
	WO 2002-EP7734	W	20020711 <--		

AB The invention relates to a method for producing polymer-electrolyte membranes using plasma-assisted deposition in a gaseous phase. The method simplifies the process in relation to prior art by the selection of its starting materials, carbon or fluorocarbon compds. and water. The invention also relates to a polyazole membrane coated by plasma-polymerization

IC ICM H01M0008-10

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 48, 72

ST **fuel cell** plasma polymd electrolyte membrane;
polyazole membrane plasma polymn coated

IT **Electrolytic cells**
Fuel cell electrolytes
Separators
(method for producing plasma-polymerized polymer electrolyte membrane and polyazole membrane coated by plasma-polymerization)

IT Polybenzimidazoles
Polybenzothiazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(method for producing plasma-polymerized polymer electrolyte membrane and polyazole membrane coated by plasma-polymerization)

IT **Fuel cells**
(solid electrolyte; method for producing plasma-polymerized polymer electrolyte membrane and polyazole membrane coated by plasma-polymerization)

IT 194-10-5DP, Pyrimido[4,5,6-gh]perimidine, copolymers containing with aryl and heteroaryl ring **25013-01-8P**, Polypyridine **30604-81-0P**, 1H-Pyrrole, homopolymer **82370-43-2P**, Polyimidazole **128611-69-8P**, 1,3,4-Thiadiazole, homopolymer **190201-51-5P**, Pyrimidine, homopolymer
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(method for producing plasma-polymerized polymer electrolyte membrane and polyazole membrane coated by plasma-polymerization)

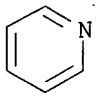
IT **25013-01-8P**, Polypyridine **30604-81-0P**, 1H-Pyrrole, homopolymer **82370-43-2P**, Polyimidazole **128611-69-8P**, 1,3,4-Thiadiazole, homopolymer **190201-51-5P**, Pyrimidine, homopolymer
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(method for producing plasma-polymerized polymer electrolyte membrane and polyazole membrane coated by plasma-polymerization)

RN 25013-01-8 HCAPLUS

CN Pyridine, homopolymer (9CI) (CA INDEX NAME)

CM 1

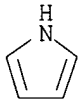
CRN 110-86-1
CMF C5 H5 N



RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

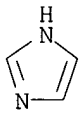
CRN 109-97-7
CMF C4 H5 N



RN 82370-43-2 HCAPLUS
CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

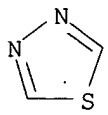
CRN 288-32-4
CMF C3 H4 N2



RN 128611-69-8 HCAPLUS
CN 1,3,4-Thiadiazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 289-06-5
CMF C2 H2 N2 S

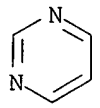


RN 190201-51-5 HCAPLUS

CN Pyrimidine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 289-95-2
CMF C4 H4 N2



L149 ANSWER 40 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2003:56659 HCAPLUS
DN 138:124980
TI **Proton-conductive** membranes or films and their manufacture for **proton** exchange membranes in **fuel cells**
IN Fujita, Shigeru; Abe, Masao
PA Nitto Denko Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2003022823	A	20030124	JP 2001-207547	20010709 <--
PRAI JP 2001-207547		20010709 <--		

AB The **proton-conductive** membranes are manufactured by (1) polymerizing (A) monofunctional monomers having phosphoric, phosphonic, or phosphinic groups in side chains with (B) monofunctional monomers having amine salts of the above groups in pores of porous membranes (e.g., ultrahigh-mol.-weight polyolefins, fluoropolymers) so that the resulting polymers are supported in the pores or (2) polymerizing the above A monomers in the pores and partially converting the side chain groups of the resulting polymers to amine salts. The films are manufactured by closing at least a part of residual hollow pores of the membranes. The polymers having partial amine salts have high adhesion to the porous membranes, and the **proton-conductive** membranes and films have high durability and mech. strength and reduce cost for **fuel cell** systems.
IC ICM H01M0008-02
ICS C08F0008-32; C08F0230-02; C08J0009-36; H01B0001-06; H01B0013-00; H01M0008-10; C08L0101-00
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, **76**
ST **proton conductive** membrane film **fuel cell**; porous membrane pore monomer polymn **proton conductor**; phosphoric monomer polymer partial amine salt; phosphonic monomer polymer partial amine salt; phosphinic monomer polymer partial amine salt
IT Films
Membranes, nonbiological
(elec. **conductive**; **proton-conductive** membranes or films using partial amine salt-bearing polymers in

membrane pores and their manufacture for **proton** exchange membranes in **fuel cells**)

IT Electric **conductors**
(films; **proton-conductive** membranes or films using partial amine salt-bearing polymers in membrane pores and their manufacture for **proton** exchange membranes in **fuel cells**
)

IT Fluoropolymers, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(porous membrane supports; **proton-conductive** membranes or films using partial amine salt-bearing polymers in membrane pores and their manufacture for **proton** exchange membranes in **fuel cells**)

IT **Fuel cells**
(**proton-conductive** membranes or films using partial amine salt-bearing polymers in membrane pores and their manufacture for **proton** exchange membranes in **fuel cells**)

IT Ionomers
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**proton-conductive** membranes or films using partial amine salt-bearing polymers in membrane pores and their manufacture for **proton** exchange membranes in **fuel cells**)

IT Polyolefins
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(ultrahigh-mol.-weight, porous membrane supports; **proton-conductive** membranes or films using partial amine salt-bearing polymers in membrane pores and their manufacture for **proton** exchange membranes in **fuel cells**)

IT 9002-88-4, UHMWPE
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(porous membrane supports; **proton-conductive** membranes or films using partial amine salt-bearing polymers in membrane pores and their manufacture for **proton** exchange membranes in **fuel cells**)

IT 490028-34-7P **490028-36-9P** 490028-37-0P
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**proton-conductive** membranes or films using partial amine salt-bearing polymers in membrane pores and their manufacture for **proton** exchange membranes in **fuel cells**)

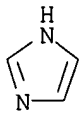
IT **490028-36-9P**
RL: DEV (Device component use); IMF (Industrial manufacture); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**proton-conductive** membranes or films using partial amine salt-bearing polymers in membrane pores and their manufacture for **proton** exchange membranes in **fuel cells**)

RN 490028-36-9 HCAPLUS

CN 2-Propenoic acid, 2-methyl-, 4,6-dihydroxy-4,6-dioxido-3,5,7-trioxa-4,6-diphosphanonane-1,9-diyl ester, polymer with 2-(phosphonooxy)ethyl 2-methyl-2-propenoate, compd. with 1H-imidazole (9CI) (CA INDEX NAME)

CM 1

CRN 288-32-4
CMF C3 H4 N2

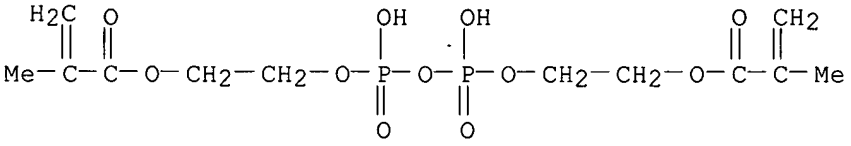


CM 2

CRN 490028-35-8
CMF (C12 H20 O11 P2 . C6 H11 O6 P)x
CCI PMS

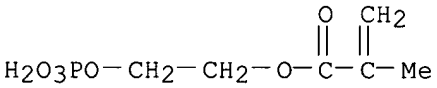
CM 3

CRN 61988-50-9
CMF C12 H20 O11 P2



CM 4

CRN 24599-21-1
CMF C6 H11 O6 P



L149 ANSWER 41 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:927733 HCAPLUS
DN 138:30831
TI Flexible electrochromic structure and methods for the production thereof
IN Hourquebie, Patrick; Topart, Patrice; Pages, Hubert
PA Commissariat a l'Energie Atomique, Fr.
SO PCT Int. Appl., 34 pp.
CODEN: PIXXD2
DT **Patent**
LA French
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2002097519	A2	20021205	WO 2002-FR1807	20020529 <--
WO 2002097519	A3	20030320		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ,

UA, UG, US, UZ, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG

FR 2825481	A1	20021206	FR 2001-7144	20010531	<--
FR 2825481	B1	20030718			
EP 1390803	A2	20040225	EP 2002-747490	20020529	<--
EP 1390803	B1	20060208			
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR					
JP 2004520632	T	20040708	JP 2003-500638	20020529	<--
AT 317561	T	20060215	AT 2002-747490	20020529	<--
US 2004012869	A1	20040122	US 2003-332979	20030123	<--
US 6798554	B2	20040928			
PRAI FR 2001-7144	A	20010531	<--		
WO 2002-FR1807	W	20020529	<--		

AB The invention relates to a flexible electrochromic structure which operates as a reflector at wavelengths ranging from (0,35) to (20) μm. The inventive structure comprises a microporous membrane including an electrolyte and the following items successively disposed in the following order on each of the surfaces of said microporous membrane in a sym. manner in relation to said membrane: a layer forming a reflecting **electrode**, an electrochromic conductive polymer layer, and a flexible transparent window at wavelengths ranging from (0,35) and (20) μm.

IC ICM G02F

CC 73-11 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 36

IT Conducting polymers
Electrochromic devices
Electrodes
Electrolytes
Heat transfer
Optical reflectors
(electrochromic device with)

IT Conducting polymers
(**polythiophenes**; electrochromic device with)

IT Metals, uses
Noble metals
RL: DEV (Device component use); USES (Uses)
(reflecting **electrodes**; electrochromic device with)

IT 9033-83-4, Poly(phenylene) 25656-57-9, Poly(diphenylamine) 26747-38-6 31135-62-3D, Aminoquinoline, polymers **96638-49-2**, Poly(phenylene vinylene) 116267-93-7, Poly(4-aminobiphenyl) 117051-73-7, Poly(diphenyl benzidine) 142189-51-3D, derivs.
RL: DEV (Device component use); USES (Uses)
(conducting polymer; electrochromic device with)

IT **25233-30-1, Polyaniline 25233-34-5, Polythiophene 30604-81-0, Polypyrrole**
RL: DEV (Device component use); USES (Uses)
(conducting; electrochromic device with)

IT 96-48-0, Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate 111-96-6, Diglyme 616-38-6, Dimethyl carbonate **17009-90-4D**, Imidazolium, cations 82113-65-3, Bis((trifluoromethyl)sulfonyl)imide 90076-65-6, Lithium bis((trifluoromethyl)sulfonyl)imide
RL: DEV (Device component use); USES (Uses)
(electrolyte; electrochromic device with)

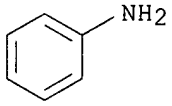
IT 7440-06-4, Platinum, uses 7440-22-4, Silver, uses 7440-57-5, Gold,

uses
RL: DEV (Device component use); USES (Uses)
(reflecting **electrodes**; electrochromic device with)
IT **96638-49-2**, Poly(phenylene vinylene)
RL: DEV (Device component use); USES (Uses)
(conducting polymer; electrochromic device with)
RN 96638-49-2 HCAPLUS
CN Poly(phenylene-1,2-ethenediyl) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
IT **25233-30-1, Polyaniline 25233-34-5, Polythiophene 30604-81-0, Polypyrrole**
RL: DEV (Device component use); USES (Uses)
(conducting; electrochromic device with)
RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 62-53-3
CMF C6 H7 N



RN 25233-34-5 HCAPLUS
CN Thiophene, homopolymer (9CI) (CA INDEX NAME)

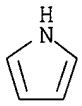
CM 1

CRN 110-02-1
CMF C4 H4 S

RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

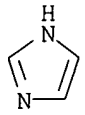
CM 1

CRN 109-97-7
CMF C4 H5 N



IT **17009-90-4D**, Imidazolium, cations
RL: DEV (Device component use); USES (Uses)

(electrolyte; electrochromic device with)
RN 17009-90-4 HCAPLUS
CN 1H-Imidazole, conjugate monoacid (9CI) (CA INDEX NAME)



L149 ANSWER 42 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:807948 HCAPLUS
DN 137:312084
TI **Proton-conductive** membranes and their use
IN Calundann, Gordon; Sansone, Michael J.; Uensal, Oemer; Kiefer, Joachim
PA Celanese Ventures G.m.b.H., Germany
SO Ger. Offen., 8 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10117686	A1	20021024	DE 2001-10117686	20010409 <--
	CA 2443541	A1	20021107	CA 2002-2443541	20020409 <--
	WO 2002088219	A1	20021107	WO 2002-EP3900	20020409 <--
	W: BR, CA, CN, JP, KR, MX, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	EP 1379573	A1	20040114	EP 2002-766620	20020409 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
	BR 2002008795	A	20040309	BR 2002-8795	20020409 <--
	CN 1606585	A	20050413	CN 2002-807955	20020409 <--
	JP 2005536570	T	20051202	JP 2002-585516	20020409 <--
	US 2004096734	A1	20040520	US 2003-472814	20031224 <--
PRAI	DE 2001-10117686	A	20010409 <--		
	WO 2002-EP3900	W	20020409 <--		

AB The title membranes, with high sp. conductivity (especially at high temps.) and useful in **fuel cells**, are based on polyazoles prepared by spreading mixts. of aromatic tetraamines and aromatic polycarboxylic acids or their esters in polyphosphoric acid on supports, heating in inert gases at ≤350°, and treating the resulting membrane until it is self-supporting. Preferred tetramines are 3,3',4,4'-biphenyltetramine, 2,3,5,6-pyridinetetramine, or their hydrochlorides, and preferred carboxylic acids are isophthalic and diphenylisophthalic acids.
IC ICM B01D0071-58
ICS H01M0008-02
CC 38-3 (Plastics Fabrication and Uses)
ST membrane **proton conductive** polyazole; **fuel cell** membrane **proton conductive**; tetramine arom copolymer membrane; dicarboxylic acid copolymer membrane;

polyphosphoric acid polyazole membrane manuf; bibenzimidazole deriv polymer membrane

IT Carboxylic acids, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(aromatic polybasic, polymers with aromatic tetramines; **proton-conductive** membranes and their use)

IT Amines, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(aromatic, tetra-, polymers with dicarboxylic acids; **proton-conductive** membranes and their use)

IT Polybenzimidazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: TEM (Technical or engineered material use); USES (Uses)
(**proton-conductive** membranes and their use)

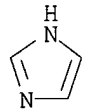
IT **Fuel cells**
(**proton-conductive** membranes for use in **fuel cells**)

IT Membranes, nonbiological
(**proton-conductive**; **proton-conductive** membranes and their use)

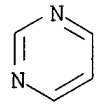
IT 110-86-1D, Pyridine, derivs., polymers **288-32-4D**, Imidazole, derivs., polymers 289-06-5D, Thiadiazole, derivs., polymers **289-95-2D**, Pyrimidine, derivs., polymers **25734-65-0** 26101-19-9, 3,3',4,4'-Biphenyltetramine-isophthalic acid copolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(**proton-conductive** membranes and their use)

IT **288-32-4D**, Imidazole, derivs., polymers **289-95-2D**, Pyrimidine, derivs., polymers **25734-65-0**
RL: TEM (Technical or engineered material use); USES (Uses)
(**proton-conductive** membranes and their use)

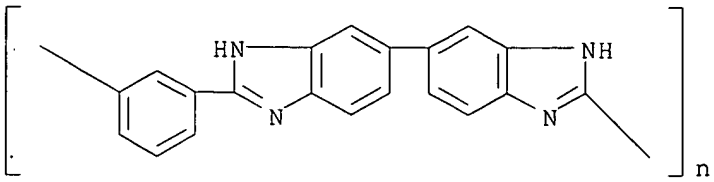
RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



RN 289-95-2 HCAPLUS
CN Pyrimidine (8CI, 9CI) (CA INDEX NAME)



RN 25734-65-0 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1,3-phenylene) (9CI) (CA INDEX NAME)



L149 ANSWER 43 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:793682 HCAPLUS
DN 137:311964
TI **Proton-conducting** membrane and the use thereof for **fuel cells**
IN Calundann, Gordon; Sansone, Michael J.; Uensal, Oemer; Kiefer, Joachim
PA Celanese Ventures G.m.b.H., Germany
SO PCT Int. Appl., 51 pp.
CODEN: PIXXD2
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002081547	A1	20021017	WO 2002-EP3901	20020409 <--
	W: BR, CA, CN, JP, KR, MX, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	DE 10117687	A1	20021017	DE 2001-10117687	20010409 <--
	CA 2443849	A1	20021017	CA 2002-2443849	20020409 <--
	EP 1379572	A1	20040114	EP 2002-745222	20020409 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
	CN 1511170	A	20040707	CN 2002-807954	20020409 <--
	BR 2002008728	A	20040720	BR 2002-8728	20020409 <--
	JP 2005536569	T	20051202	JP 2002-579927	20020409 <--
	US 2004127588	A1	20040701	US 2004-472810	20040210 <--
PRAI	DE 2001-10117687	A	20010409 <--		
	WO 2002-EP3901	W	20020409 <--		

AB **Proton-conducting** membranes based on polyazoles, useful as polymer electrolyte membranes in **fuel cells** at >100°, are manufactured by dissolving the polyazoles in polyphosphoric acid and forming membranes.
IC ICM C08G0073-00
ICS C08J0005-00; C08L0079-00; H01M0008-00; C08J0007-00; B05D0003-00
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): **52, 76**
ST **proton conducting** polyphosphoric acid doped polyazole membrane **fuel cell**; polymer electrolyte membrane polyphosphoric acid doped polyazole
IT Polybenzimidazoles
Polybenzothiazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
RL: TEM (Technical or engineered material use); USES (Uses)
(polyphosphoric acid-doped; **proton-conducting** membranes from polymer electrolytes based on polyphosphoric acid-doped polyazoles)
IT **Fuel cells**

Membranes, nonbiological
Polymer electrolytes
(**proton-conducting** membranes from polymer electrolytes based on polyphosphoric acid-doped polyazoles)

IT Polyphosphoric acids
RL: TEM (Technical or engineered material use); USES (Uses)
(**proton-conducting** membranes from polymer electrolytes based on polyphosphoric acid-doped polyazoles)

IT Ionic **conductors**
(**protonic**, elec. **conductors**; **proton-conducting** membranes from polymer electrolytes based on polyphosphoric acid-doped polyazoles)

IT **25013-01-8**, Polypyridine 25584-58-1 **25734-65-0**
26101-19-9 **27233-57-4** **28576-59-2** 29692-96-4
31851-25-9 **32075-68-6** **32109-42-5**, Poly(1H-benzimidazole-2,5-diyl) 39151-97-8 **42209-07-4**
55861-56-8 56411-22-4 **56713-21-4** **82370-43-2**,
Polyimidazole **96926-85-1** 96937-25-6 96937-27-8 111404-15-0
111404-18-3 **111404-83-2** **111404-85-4**
132937-69-0 132955-49-8 **240799-37-5**
268567-69-7 367276-48-0 **368871-22-1**
471256-97-0 **471256-98-1** **471256-99-2**
471257-00-8 **471257-01-9** **471257-02-0**
471257-03-1 471257-04-2 471257-05-3 471257-06-4 471257-07-5
471257-08-6 471257-09-7 471257-10-0 471257-11-1 471257-12-2
472960-34-2
RL: TEM (Technical or engineered material use); USES (Uses)
(polyphosphoric acid-doped; **proton-conducting** membranes from polymer electrolytes based on polyphosphoric acid-doped polyazoles)

IT **25013-01-8**, Polypyridine **25734-65-0** **27233-57-4**
28576-59-2 **32075-68-6** **32109-42-5**,
Poly(1H-benzimidazole-2,5-diyl) **42209-07-4** **55861-56-8**
56713-21-4 **82370-43-2**, Polyimidazole **96926-85-1**
111404-83-2 **111404-85-4** **132937-69-0**
240799-37-5 **268567-69-7** **368871-22-1**
471256-97-0 **471256-98-1** **471256-99-2**
471257-00-8 **471257-01-9** **471257-02-0**
472960-34-2
RL: TEM (Technical or engineered material use); USES (Uses)
(polyphosphoric acid-doped; **proton-conducting** membranes from polymer electrolytes based on polyphosphoric acid-doped polyazoles)

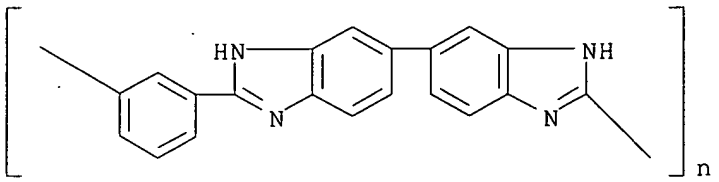
RN 25013-01-8 HCAPLUS
CN Pyridine, homopolymer (9CI) (CA INDEX NAME)

CM 1

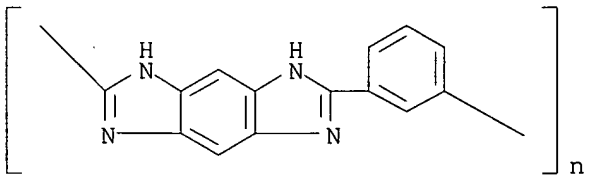
CRN 110-86-1
CMF C5 H5 N

RN 25734-65-0 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1,3-phenylene) (9CI) (CA INDEX

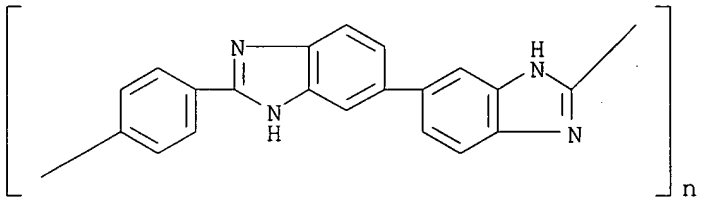
NAME)



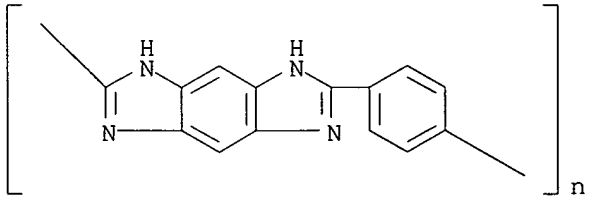
RN 27233-57-4 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-1,3-phenylene] (9CI) (CA INDEX NAME)



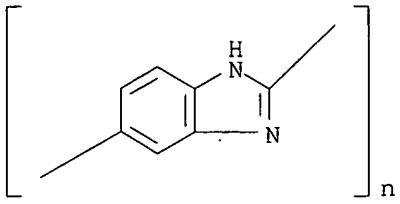
RN 28576-59-2 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1,4-phenylene) (9CI) (CA INDEX NAME)



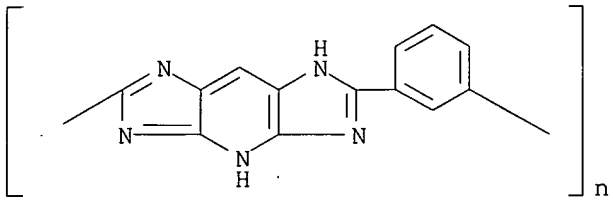
RN 32075-68-6 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-1,4-phenylene] (9CI) (CA INDEX NAME)



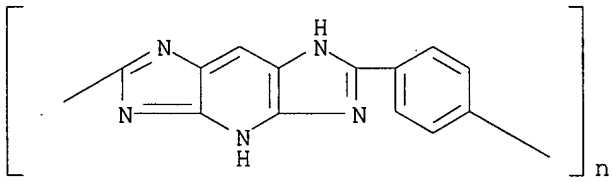
RN 32109-42-5 HCAPLUS
CN Poly(1H-benzimidazole-2,5-diyl) (9CI) (CA INDEX NAME)



RN 42209-07-4 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)-1,3-phenylene] (9CI) (CA INDEX NAME)



RN 55861-56-8 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)-1,4-phenylene] (9CI) (CA INDEX NAME)

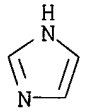


RN 56713-21-4 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diylpyridinediyl) (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 82370-43-2 HCAPLUS
CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

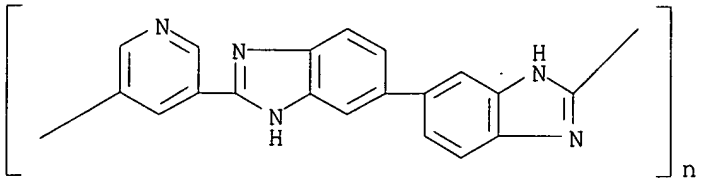
CM 1

CRN 288-32-4
CMF C3 H4 N2

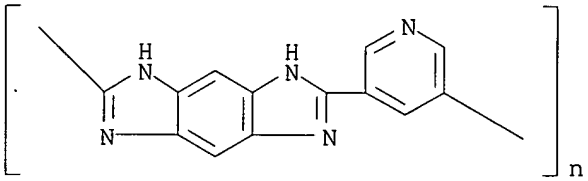


RN 96926-85-1 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-3,5-pyridinediyl) (9CI) (CA

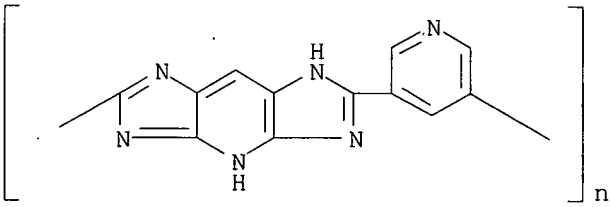
INDEX NAME)



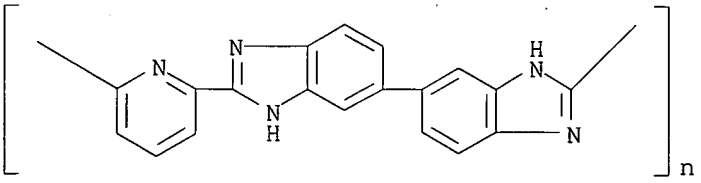
RN 111404-83-2 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-3,5-pyridinediyl] (9CI) (CA INDEX NAME)



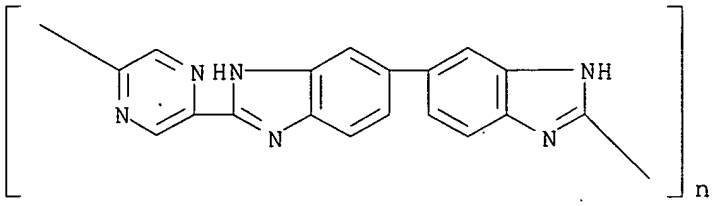
RN 111404-85-4 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)-3,5-pyridinediyl] (9CI) (CA INDEX NAME)



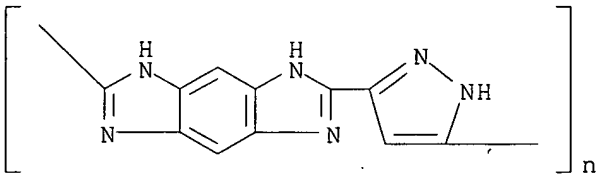
RN 132937-69-0 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-2,6-pyridinediyl) (9CI) (CA INDEX NAME)



RN 240799-37-5 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-2,5-pyrazinediyl) (9CI) (CA INDEX NAME)

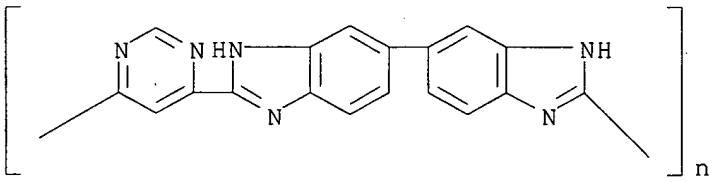


RN 268567-69-7 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-1H-pyrazole-3,5-diyl] (9CI) (CA INDEX NAME)

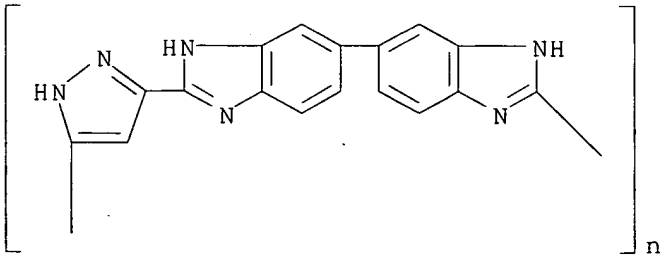


RN 368871-22-1 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)pyridinediyl] (9CI) (CA INDEX NAME)

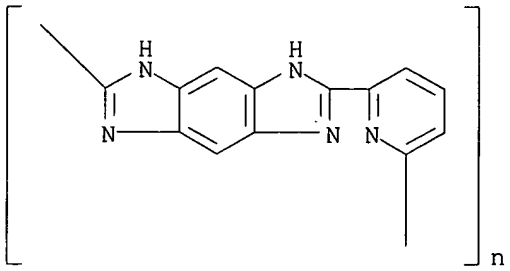
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 471256-97-0 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-4,6-pyrimidinediyl) (9CI) (CA INDEX NAME)



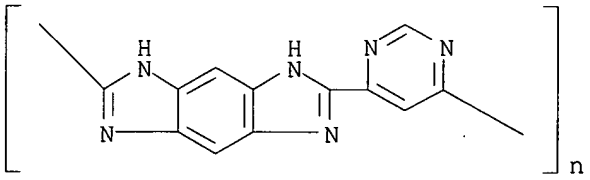
RN 471256-98-1 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1H-pyrazole-3,5-diyl) (9CI) (CA INDEX NAME)



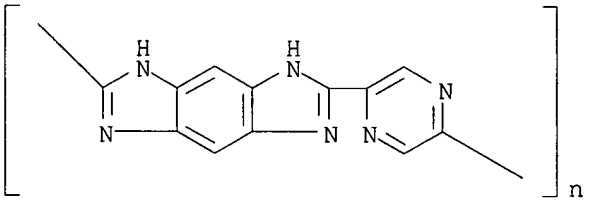
RN 471256-99-2 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-2,6-pyridinediyl] (9CI) (CA INDEX NAME)



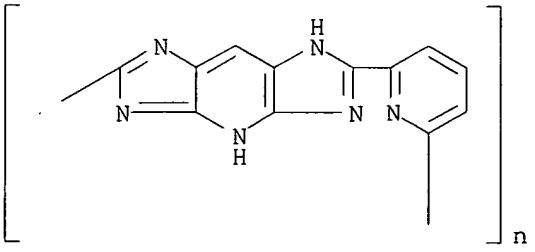
RN 471257-00-8 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-4,6-pyrimidinediyl] (9CI) (CA INDEX NAME)



RN 471257-01-9 HCAPLUS
CN Poly[(1,5-dihydrobenzo[1,2-d:4,5-d']diimidazole-2,6-diyl)-2,5-pyrazinediyl] (9CI) (CA INDEX NAME)



RN 471257-02-0 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)-2,6-pyridinediyl] (9CI) (CA INDEX NAME)



RN 472960-34-2 HCAPLUS
CN Poly[(1,4-dihydrodiimidazo[4,5-b:4',5'-e]pyridine-2,6-diyl)pyridinediyl] (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Osaheni, J	1995	28	1172	MACROMOLECULES	HCAPLUS
Savinell, R	1996			US 5525436 A	HCAPLUS
Yoshio, I	1967			US 3313783 A	

L149 ANSWER 44 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:791934 HCAPLUS
DN 137:282820
TI Anticorrosive, electric-conductive primer for surface coating of metals especially used in lithium-polymer **battery** systems
IN Naarmann, Herbert; Kruger, Franz Josef
PA Dilo Trading AG, Switz.
SO Ger. Offen., 4 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 10114232	A1	20021017	DE 2001-10114232	20010322 <--
	DE 10114232	C2	20030320		
PRAI	DE 2001-10114232		20010322 <--		

AB The anticorrosive, elec. **conductive** coatings for metals are produced from polymers without **proton**-active groups in combination with metallic-**conductive** fillers as dispersion. The thin coatings are applied on metal surfaces with a thickness of 10-1000 μm. The polymers are selected from polyolefins, polystyrene, polyvinyl ether, poly(N-vinyl) compds. as well as poly(meth)acrylester of C4-C12 alcs. The metallic-**conductive** fillers are selected from carbons like carbon black, graphite, or carbon fibers as well as polypyrrol, **polythiophene**, **polyaniline** as well as metals such as Ti, Zn, Ag, and Au in the form of powders, whisker, or colloids. The carbon black dispersion is used as primer for coating of Cu, resp. Al foils, whereby a **battery**-type **anode** material, resp. **cathode** material can be deposited on the primer coating to form **electrodes** for Li-polymer **batteries** characterized by anticorrosive properties.
IC ICM C23F0015-00
ICS H01M0010-02
CC 56-6 (Nonferrous Metals and Alloys)
Section cross-reference(s): 38, 42, **52**
ST anticorrosive primer surface coating metal **electrode**; elec conductive primer polymer carbon black; lithium polymer **battery** **electrode** primer coating
IT Vinyl compounds, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(N-polymers; anticorrosive, elec. conductive primer for surface coating of metals especially used in lithium-polymer **battery** systems)
IT **Battery electrodes**
Conducting polymers
(anticorrosive, elec. conductive primer for surface coating of metals especially used in lithium-polymer **battery** systems)
IT Carbon black, processes

Polyolefins
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(anticorrosive, elec. conductive primer for surface coating of metals especially used in lithium-polymer **battery** systems)

IT Coating materials
(anticorrosive; anticorrosive, elec. conductive primer for surface coating of metals especially used in lithium-polymer **battery** systems)

IT Styrene-butadiene rubber, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(block, triblock; anticorrosive, elec. conductive primer for surface coating of metals especially used in lithium-polymer **battery** systems)

IT Soot
(filler; anticorrosive, elec. conductive primer for surface coating of metals especially used in lithium-polymer **battery** systems)

IT Carbon fibers, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(filler; anticorrosive, elec. conductive primer for surface coating of metals especially used in lithium-polymer **battery** systems)

IT Polyesters, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(foil; anticorrosive, elec. conductive primer for surface coating of metals especially used in lithium-polymer **battery** systems)

IT Alkadienes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(polymers; anticorrosive, elec. conductive primer for surface coating of metals especially used in lithium-polymer **battery** systems)

IT Ethers, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(vinyl, polymers; anticorrosive, elec. conductive primer for surface coating of metals especially used in lithium-polymer **battery** systems)

IT 7429-90-5, Aluminum, processes 7440-50-8, Copper, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(anticorrosive, elec. conductive primer for surface coating of metals especially used in lithium-polymer **battery** systems)

IT 79-10-7D, Acrylic acid, C4-C12 esters, polymers 79-41-4D, Methacrylic acid, C4-C12 esters, polymers 100-42-5D, Styrene, polymers 7440-22-4, Silver, processes 7440-32-6, Titanium, processes 7440-57-5, Gold, processes 7440-66-6, Zinc, processes **9003-39-8**, Luviskol K90 **25233-30-1**, **Polyaniline 25233-34-5**, **Polythiophene 29297-55-0**, Vinylpyrrolidone vinylimidazole copolymer **30604-81-0**
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)

(anticorrosive, elec. conductive primer for surface coating of metals especially used in lithium-polymer **battery** systems)

IT 7782-42-5, Graphite, processes
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(filler; anticorrosive, elec. conductive primer for surface coating of metals especially used in lithium-polymer **battery** systems)

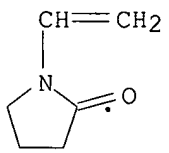
IT 106107-54-4 694491-73-1
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(styrene-butadiene rubber, block, triblock; anticorrosive, elec. conductive primer for surface coating of metals especially used in lithium-polymer **battery** systems)

IT **9003-39-8**, Luviskol K90 **25233-30-1, Polyaniline 25233-34-5, Polythiophene 29297-55-0,** Vinylpyrrolidone vinylimidazole copolymer **30604-81-0**
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(anticorrosive, elec. conductive primer for surface coating of metals especially used in lithium-polymer **battery** systems)

RN 9003-39-8 HCAPLUS
CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

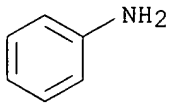
CRN 88-12-0
CMF C6 H9 N O



RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 62-53-3
CMF C6 H7 N



RN 25233-34-5 HCAPLUS
CN Thiophene, homopolymer (9CI) (CA INDEX NAME)

CM 1

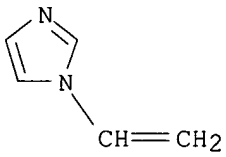
CRN 110-02-1

CMF C4 H4 S

RN 29297-55-0 HCAPLUS
CN 2-Pyrrolidinone, 1-ethenyl-, polymer with 1-ethenyl-1H-imidazole (9CI) (CA INDEX NAME)

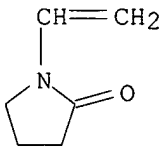
CM 1

CRN 1072-63-5
CMF C5 H6 N2



CM 2

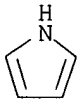
CRN 88-12-0
CMF C6 H9 N O



RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 109-97-7
CMF C4 H5 N



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon				JP 10-101793 A	HCAPLUS

Anon				FR 1141594	
Anon				DE 3412234 A1	HCAPLUS
Anon				US 4119763	HCAPLUS
Anon				WO 9950922 A1	HCAPLUS

L149 ANSWER 45 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:465870 HCAPLUS
DN 137:49667
TI Production method and use of a cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with an ionic liquid
IN Hennige, Volker; Hying, Christian; Hoerpel, Gerhard
PA Creavis Gesellschaft fuer Technologie und Innovation, Germany
SO PCT Int. Appl., 41 pp.
CODEN: PIXXD2
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2002047802	A1	20020620	WO 2001-EP12499	20011029 <--
	W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
	RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
	DE 10061959	A1	20020620	DE 2000-10061959	20001213 <--
	CA 2431057	A1	20020620	CA 2001-2431057	20011029 <--
	AU 2002021783	A5	20020624	AU 2002-21783	20011029 <--
	EP 1345675	A1	20030924	EP 2001-270378	20011029 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	JP 2004515351	T	20040527	JP 2002-549367	20011029 <--
	NO 2003002718	A	20030613	NO 2003-2718	20030613 <--
	US 2004038105	A1	20040226	US 2003-433488	20030613 <--
PRAI	DE 2000-10061959	A	20001213 <--		
	WO 2001-EP12499	W	20011029 <--		

OS MARPAT 137:49667
AB Cationic- and **proton-conducting** composite membranes for **fuel cells** are based on a porous and flexible modified ceramic or glass-like membrane in which the pores and interstitial spaces are impregnated with an ionic liquid, which imparts favorable **conductivity** properties, even at >100°. The membrane carrier can be composed of glass, plastics and polymers, ceramics, and minerals, and contain such ion-**conducting** functionalities as sulfonic acids, phosphonic acids, carboxylic acids, silylsulfonic and silylphosphonic acids, oxyacids, phosphates, phosphides, sulfates, hydroxysilyl acids, sulfoaryl phosphates, oxymetal salts (e.g., vanadate, stannate, plumbate, chromate, wolframate, manganate, titanate, etc.), aluminosilicates, zeolites, and various metal salts. Ionic liqs. are selected from imidazolium, pyridinium, quaternary ammonium, and quaternary phosphonium salts.
IC ICM B01D0071-02
ICS B01D0053-32; B01D0071-04; B01D0069-14
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38, 48, 57, **72**

ST **fuel cell** cation **conducting** ceramic membrane; **proton conducting** ceramic membrane **fuel cell**

IT Fluoropolymers, uses
Polyethers, uses
Polysulfones, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(aminolyzed; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Acids, uses
RL: MOA (Modifier or additive use); USES (Uses)
(isopoly; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Electrolysis
(membrane; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Acids, uses
RL: MOA (Modifier or additive use); USES (Uses)
(oxo; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Group VA element compounds
RL: MOA (Modifier or additive use); USES (Uses)
(phosphides; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Group IVA element compounds
RL: MOA (Modifier or additive use); USES (Uses)
(plumbates; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Polyimides, uses
Polyketones
RL: TEM (Technical or engineered material use); USES (Uses)
(polyether-, aminolyzed; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Polyimides, uses
Polyketones
RL: TEM (Technical or engineered material use); USES (Uses)
(polyether-, sulfonated; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Polyethers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polyimide-, aminolyzed; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Polyethers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polyimide-, sulfonated; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Polyethers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polyketone-, aminolyzed; production method and use of cation-

conducting or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Polyethers, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polyketone-, sulfonated; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Ceramic membranes
Ceramics
Electrodialysis
Fuel cell separators
Ionic **conductors**
Ionic liquids
Membranes, nonbiological
(production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Aluminates
Aluminosilicates, uses
Bronsted acids
Chromates
Heteropoly acids
Manganates
Molybdates
Oxides (inorganic), uses
Phosphates, uses
Phosphonium compounds
Polysiloxanes, uses
Quaternary ammonium compounds, uses
Silicates, uses
Sulfates, uses
Titanates
Zeolites (synthetic), uses
RL: MOA (Modifier or additive use); USES (Uses)
(production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Glass, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Minerals, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

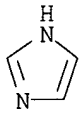
IT Plastics, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Sulfonic acids, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Sulfonic acids, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(salts; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)

IT Group IVA element compounds
RL: MOA (Modifier or additive use); USES (Uses)
(stannates; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with

ionic liquid)
IT Fluoropolymers, uses
Polyethers, uses
Polysulfones, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(sulfonated; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)
IT Group VIB element compounds
RL: MOA (Modifier or additive use); USES (Uses)
(tungstates; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)
IT Heteropoly acids
RL: MOA (Modifier or additive use); USES (Uses)
(tungstophosphoric; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)
IT Group VB element compounds
RL: MOA (Modifier or additive use); USES (Uses)
(vanadates; production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)
IT 1314-23-4, Zirconia, uses 1314-56-3, Phosphorus oxide (P2O5), uses 1344-28-1, Alumina, uses 7429-90-5, Aluminum, uses 7439-89-6, Iron, uses 7439-93-2, Lithium, uses 7439-95-4, Magnesium, uses 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-09-7, Potassium, uses 7440-21-3, Silicon, uses 7440-23-5, Sodium, uses 7440-31-5, Tin, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 7440-36-0, Antimony, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-62-2, Vanadium, uses 7440-65-5, Yttrium, uses 7440-66-6, Zinc, uses 7440-67-7, Zirconium, uses 7440-70-2, Calcium, uses 7631-86-9, Silica, uses 7723-14-0, Phosphorus, uses 13463-67-7, Titania, uses 13765-94-1 13765-95-2, Zirconium phosphate 13765-96-3 15477-76-6, Phosphonate 16969-45-2D, Pyridinium, salts **17009-90-4D**, Imidazolium, salts 145022-44-2, 1-Ethyl-3-methylimidazolium trifluoromethanesulfonate
RL: MOA (Modifier or additive use); USES (Uses)
(production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)
IT 463-79-6, Carbonic acid, uses 463-79-6D, Carbonic acid, salt 9002-84-0D, Ptfe, aminolyzed 9002-84-0D, Ptfe, sulfonated 13598-36-2, Phosphonic acid 13598-36-2D, Phosphonic acid, salt 24937-79-9D, Polyvinylidene fluoride, aminolyzed 24937-79-9D, Polyvinylidene fluoride, sulfonated
RL: TEM (Technical or engineered material use); USES (Uses)
(production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)
IT **17009-90-4D**, Imidazolium, salts
RL: MOA (Modifier or additive use); USES (Uses)
(production method and use of cation-**conducting** or **proton-conducting** ceramic membrane infiltrated with ionic liquid)
RN 17009-90-4 HCAPLUS
CN 1H-Imidazole, conjugate monoacid (9CI) (CA INDEX NAME)



● H^+

RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Creavis	1999			WO 9962620 A	HCAPLUS
Uop Inc	1987			US 4708981 A	HCAPLUS
V I T O	1998			EP 0838258 A	HCAPLUS

L149 ANSWER 46 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:364135 HCAPLUS
DN 136:357470
TI Secondary **battery** of **proton conductive** polymer
IN **Nobuta, Tomoki**; **Nishiyama, Toshihiko**; **Kamisuki, Hiroyuki**; Harada, Gaku; **Kurosaki, Masato**; Nakagawa, Yuuji; Yoshida, Shinya; **Mitani, Masaya**
PA **NEC Tokin** Corporation, Japan
SO Eur. Pat. Appl., 10 pp.
CODEN: EPXXDW
DT **Patent**
LA English
FAN.CNT 1

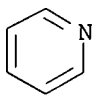
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1205995	A2	20020515	EP 2001-126869	20011112 <--
	EP 1205995	A3	20060301		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	JP 2002151141	A	20020524	JP 2000-345256	20001113 <--
	JP 3708426	B2	20051019		
	TW 522580	B	20030301	TW 2001-90125453	20011015 <--
	CN 1353471	A	20020612	CN 2001-134906	20011112 <--
	US 2002086203	A1	20020704	US 2001-986791	20011113 <--
	US 6800395	B2	20041005		
PRAI	JP 2000-345256	A	20001113 <--		

AB A secondary **battery** of a **proton conductive** polymer, wherein a pos. **electrode** and a neg. **electrode** are arranged facing to each other via a separator in an electrolyte and only a **proton** or a **proton** of a hydroxyl group in an **indole trimer** and a π conjugated polymer, i.e., an active material of **electrode** in the pos. **electrode** and in the neg. **electrode** participates in a charge/discharge, and a **proton** concentration is 5 to 40% and an anion concentration is 30 to 60% in the solution, resp., and the anion concentration is at least higher than the **proton** concentration
IC ICM H01M0010-36
ICS H01M0004-60
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy

Technology)
Section cross-reference(s): 38
ST **battery proton conductive** polymer
IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(binder; secondary **battery** of **proton conductive** polymer)
IT **Polyquinoxalines**
RL: DEV (Device component use); USES (Uses)
(polyphenylquinoxalines; secondary **battery** of **proton conductive** polymer)
IT **Conducting** polymers
Secondary batteries
(secondary **battery** of **proton conductive** polymer)
IT **Polyanilines**
Polyquinoxalines
RL: DEV (Device component use); USES (Uses)
(secondary **battery** of **proton conductive** polymer)
IT 24937-79-9, Polyfluorovinylidene
RL: MOA (Modifier or additive use); USES (Uses)
(binder; secondary **battery** of **proton conductive** polymer)
IT 7664-93-9, Sulfuric acid, uses **25013-01-8**, Polypyridine
25233-30-1, **Polyaniline** 26997-10-4 53162-00-8 116267-93-7
190201-51-5, Pyrimidine, homopolymer **220310-61-2**,
5-Cyanoindole trimer 245090-39-5, 9,10-Anthracenedione, diamino-,
homopolymer **420784-28-7**
RL: DEV (Device component use); USES (Uses)
(secondary **battery** of **proton conductive** polymer)
IT 7440-44-0, Carbon, uses 7646-93-7, Potassium Hydrogen sulfate
7803-63-6, Ammonium bisulfate 14996-02-2, Hydrogen sulfate, uses
RL: MOA (Modifier or additive use); USES (Uses)
(secondary **battery** of **proton conductive** polymer)
IT **25013-01-8**, Polypyridine **190201-51-5**, Pyrimidine,
homopolymer **220310-61-2**, 5-Cyanoindole trimer
420784-28-7
RL: DEV (Device component use); USES (Uses)
(secondary **battery** of **proton conductive** polymer)
RN 25013-01-8 HCAPLUS
CN Pyridine, homopolymer (9CI) (CA INDEX NAME)

CM 1

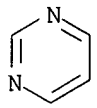
CRN 110-86-1
CMF C5 H5 N



RN 190201-51-5 HCAPLUS
CN Pyrimidine, homopolymer (9CI) (CA INDEX NAME)

CM 1

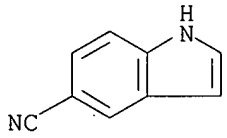
CRN 289-95-2
CMF C4 H4 N2



RN 220310-61-2 HCAPLUS
CN 1H-Indole-5-carbonitrile, trimer (9CI) (CA INDEX NAME)

CM 1

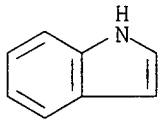
CRN 15861-24-2
CMF C9 H6 N2



RN 420784-28-7 HCAPLUS
CN 1H-Indole, trimer (9CI) (CA INDEX NAME)

CM 1

CRN 120-72-9
CMF C8 H7 N



L149 ANSWER 47 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:349228 HCAPLUS
DN 136:343332
TI Secondary **battery** of **proton conductive** polymer
IN **Kamisuki, Hiroyuki**; **Nishiyama, Toshihiko**; Harada, Gaku; Yoshida, Shinya; **Kurosaki, Masato**; Nakagawa, Yuuji; **Nobuta, Tomoki**; **Mitani, Masaya**
PA Nec Corporation, Japan
SO Eur. Pat. Appl., 13 pp.
CODEN: EPXXDW
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1204156	A2	20020508	EP 2001-126015	20011031 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
	JP 2002141105	A	20020517	JP 2000-336276	20001102 <--
	JP 3594895	B2	20041202		
	TW 523944	B	20030311	TW 2001-90126147	20011023 <--
	US 2002076608	A1	20020620	US 2001-985272	20011102 <--
	US 6899974	B2	20050531		
PRAI	JP 2000-336276	A	20001102 <--		

AB In a secondary **battery** of a **proton conductive** polymer, a pos. **electrode** and a neg. **electrode** are arranged facing to each other via a separator in an electrolytic solution and only a **proton** in a π conjugated polymer or a **proton** of a hydroxyl group in a hydroxyl-containing macromol. as an active material of an **electrode** in the pos. and neg. **electrodes** participates in a charge/discharge; the secondary **battery** uses a membrane, which has acid resistance, oxidation resistance and a functional group having cation exchange function, as the separator.

IC ICM H01M0010-36
ICS H01M0004-60; H01M0002-16

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **battery** rechargeable **proton conductive** polymer

IT Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(binder; secondary **battery** of **proton conductive** polymer)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(fluorine- and sulfo-containing, ionomers; secondary **battery** of **proton conductive** polymer)

IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(polyoxyalkylene-, sulfo-containing, ionomers; secondary **battery** of **proton conductive** polymer)

IT Ionomers
RL: DEV (Device component use); USES (Uses)
(polyoxyalkylenes, fluorine- and sulfo-containing; secondary **battery** of **proton conductive** polymer)

IT **Polyquinoxalines**
RL: DEV (Device component use); USES (Uses)
(polyphenylquinoxalines; secondary **battery** of **proton conductive** polymer)

IT **Secondary batteries**
Secondary battery separators
(secondary **battery** of **proton conductive** polymer)

IT Macromolecular compounds
RL: DEV (Device component use); USES (Uses)
(secondary **battery** of **proton conductive** polymer)

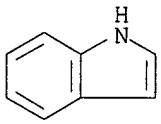
IT 24937-79-9, Polyfluorovinylidene
RL: MOA (Modifier or additive use); USES (Uses)
(binder; secondary **battery** of **proton conductive** polymer)

IT 7664-93-9, Sulfuric acid, uses **82451-55-6**, Polyindole

415942-36-8, Nafion 17
RL: DEV (Device component use); USES (Uses)
(secondary **battery** of **proton conductive** polymer)
IT 7440-44-0, Carbon, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(secondary **battery** of **proton conductive** polymer)
IT **82451-55-6**, Polyindole
RL: DEV (Device component use); USES (Uses)
(secondary **battery** of **proton conductive** polymer)
RN 82451-55-6 HCAPLUS
CN 1H-Indole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 120-72-9
CMF C8 H7 N



L149 ANSWER 48 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:69588 HCAPLUS
DN 136:105170
TI Manufacture of **cathode** for secondary lithium **battery**, the **cathode**, and the **battery** using it
IN Hashimoto, Tsutomu; Tajima, Hidehiko
PA Mitsubishi Heavy Industries, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

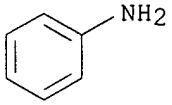
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2002025542	A	20020125	JP 2000-211735	20000712 <--
PRAI	JP 2000-211735		20000712 <--		

AB The **cathode** is manufactured by the following steps: (1) mixing **cathode** active mass powder, elec. conductive powder, and polymer binders with a solvent, (2) dissolving elec. conductive polymers to the resulting mixture for forming a slurry with 0.05-10 weight% of the polymers, and (3) applying the slurry on a current collector and removing the solvent for formation of a **cathode** layer. Since the slurry has low viscosity, agglomeration of the elec. conductive powder is prevented, and it is uniformly dispersed in the **cathode** layer. The **battery** using the **cathode** has high charge/discharge capacity.
IC ICM H01M0004-04
ICS H01M0004-02; H01M0004-62; H01M0010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST elec conductive powder uniform dispersion **cathode** lithium

battery
IT **Battery cathodes**
(manufacture of **cathode** containing uniformly dispersed elec. conductive powder for lithium **battery** with high capacity)
IT Carbon black, uses
Fluoropolymers, uses
Polyanilines
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(manufacture of **cathode** containing uniformly dispersed elec. conductive powder for lithium **battery** with high capacity)
IT 12057-17-9, Lithium manganese oxide (LiMn2O4)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(active mass; manufacture of **cathode** containing uniformly dispersed elec. conductive powder for lithium **battery** with high capacity)
IT 24937-79-9, Polyvinylidene fluoride **25233-30-1**, **Polyaniline 25233-34-5**, **Polythiophene 30604-81-0**, **Polypyrrole 82370-43-2**, Polyimidazole
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(manufacture of **cathode** containing uniformly dispersed elec. conductive powder for lithium **battery** with high capacity)
IT 872-50-4, NMP, uses
RL: NUU (Other use, unclassified); USES (Uses)
(solvent; manufacture of **cathode** containing uniformly dispersed elec. conductive powder for lithium **battery** with high capacity)
IT **25233-30-1**, **Polyaniline 25233-34-5**, **Polythiophene 30604-81-0**, **Polypyrrole 82370-43-2**, Polyimidazole
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(manufacture of **cathode** containing uniformly dispersed elec. conductive powder for lithium **battery** with high capacity)
RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 62-53-3
CMF C6 H7 N



RN 25233-34-5 HCAPLUS
CN Thiophene, homopolymer (9CI) (CA INDEX NAME)

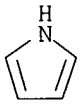
CM 1

CRN 110-02-1
CMF C4 H4 S

RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

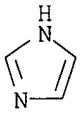
CRN 109-97-7
CMF C4 H5 N



RN 82370-43-2 HCAPLUS
CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 288-32-4
CMF C3 H4 N2



L149 ANSWER 49 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:27682 HCAPLUS
DN 136:72317
TI **Cathode**, its manufacture, and secondary lithium **battery** using it for excellent cycling performance
IN Kobayashi, Katsuaki; Hashimoto, Tsutomu; Tajima, Hidehiko
PA Mitsubishi Heavy Industries, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2002008639	A	20020111	JP 2000-182190	20000616 <--
PRAI JP 2000-182190		20000616 <--		

AB The **cathode** is manufactured by the following steps: (1) covering a mixed oxide LixMn2-yMyO4 (M = Co, Ni, Fe, Mg, Cr, Ba, Ag, Nb, and/or Al; x = 0-2.0; y = 0-2.0) with an elec. conductive polymer, (2) mixing the covered mixed oxide with conducting aids and a solvent containing a polymer binder for producing a slurry, and (3) applying the slurry on a current collector and removing the solvent for formation of a **cathode** layer. The obtained **cathode** has a covering rate of the conductive polymer to the mixed oxide ≥17% and that of the binder

to the mixed oxide ≤49% on the surface of the **cathode** layer. The **battery** using the **cathode** is also claimed. Since exposure of the mixed oxide to electrolyte solution that causes elution of Mn is suppressed, deterioration of the **battery** is prevented.

IC ICM H01M0004-04
ICS H01M0004-02; H01M0004-58; H01M0004-62; H01M0010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST manganese elution prevention conductive polymer cover **cathode** lithium **battery**

IT Fluoropolymers, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(binder; manufacture of **cathode** containing Li-Mn oxide covered with polymer with high covering rate for Li **battery** with excellent cycling performance)

IT Carbon black, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(conducting aid; manufacture of **cathode** containing Li-Mn oxide covered with polymer with high covering rate for Li **battery** with excellent cycling performance)

IT **Polyanilines**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(conductive polymer; manufacture of **cathode** containing Li-Mn oxide covered with polymer with high covering rate for Li **battery** with excellent cycling performance)

IT **Battery cathodes**
(manufacture of **cathode** containing Li-Mn oxide covered with polymer with high covering rate for Li **battery** with excellent cycling performance)

IT 24937-79-9, Poly(vinylidene fluoride)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(binder; manufacture of **cathode** containing Li-Mn oxide covered with polymer with high covering rate for Li **battery** with excellent cycling performance)

IT **25233-34-5, Polythiophene 30604-81-0, Polypyrrole 82370-43-2**, Polyimidazole
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(conductive polymer; manufacture of **cathode** containing Li-Mn oxide covered with polymer with high covering rate for Li **battery** with excellent cycling performance)

IT 12057-17-9, Lithium manganese oxide (LiMn2O4)
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(manufacture of **cathode** containing Li-Mn oxide covered with polymer with high covering rate for Li **battery** with excellent cycling performance)

IT **25233-34-5, Polythiophene 30604-81-0, Polypyrrole 82370-43-2**, Polyimidazole
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
(conductive polymer; manufacture of **cathode** containing Li-Mn oxide covered with polymer with high covering rate for Li **battery** with excellent cycling performance)

RN 25233-34-5 HCAPLUS

CN Thiophene, homopolymer (9CI) (CA INDEX NAME)

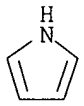
CM 1

CRN 110-02-1
CMF C4 H4 S

RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

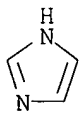
CRN 109-97-7
CMF C4 H5 N



RN 82370-43-2 HCAPLUS
CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 288-32-4
CMF C3 H4 N2



L149 ANSWER 50 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2002:27681 HCAPLUS
DN 136:72316
TI Inspection of polymer-covered **cathode** for secondary lithium **batteries**
IN Kobayashi, Katsuaki; Hashimoto, Tsutomu; Tajima, Hidehiko
PA Mitsubishi Heavy Industries, Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2002008638	A	20020111	JP 2000-182189	20000616 <--
PRAI JP 2000-182189		20000616 <--		

AB The **cathode** has a layer comprising a mixed oxide LixMn2-yMyO4 (M = Co, Ni, Fe, Mg, Cr, Ba, Ag, Nb, and/or Al; x = 0-2.0; y = 0-2.0), elec.

conductive polymer, conducting aids, and polymer binders. The **cathode** is inspected by the following steps: (1) irradiating x ray to the layer and detecting the released photoelectrons, (2) analyzing their energy for measuring the occupation areas of the conductive polymer, conductance aids, and binders on the layer surface, and (3) measuring the covering rate of the conductive polymer to the mixed oxide based on the measured occupation areas. Since exposure of the mixed oxide to electrolyte solution causes deterioration of **batteries**, the detected **cathodes** with low polymer-covering rate are removed during fabrication of the **batteries**.

IC ICM H01M0004-04
ICS H01M0004-58; H01M0004-62; H01M0010-40

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST x ray photoelectron spectroscopy polymer cover **cathode** lithium **battery**; inspection polymer cover **cathode** lithium **battery**

IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(binder; inspection of polymer-covered **cathode** for Li **battery** by XPS for removal of inferior **cathode**)

IT Carbon black, uses
RL: DEV (Device component use); USES (Uses)
(conducting aid; inspection of polymer-covered **cathode** for Li **battery** by XPS for removal of inferior **cathode**)

IT **Polyanilines**
RL: DEV (Device component use); USES (Uses)
(conductive polymer; inspection of polymer-covered **cathode** for Li **battery** by XPS for removal of inferior **cathode**)

IT **Battery cathodes**
(inspection of polymer-covered **cathode** for Li **battery** by XPS for removal of inferior **cathode**)

IT Oxides (inorganic), uses
RL: DEV (Device component use); USES (Uses)
(lithium-manganese-containing; inspection of polymer-covered **cathode** for Li **battery** by XPS for removal of inferior **cathode**)

IT 24937-79-9, Poly(vinylidene fluoride)
RL: DEV (Device component use); USES (Uses)
(binder; inspection of polymer-covered **cathode** for Li **battery** by XPS for removal of inferior **cathode**)

IT **25233-34-5, Polythiophene 30604-81-0, Polypyrrole 82370-43-2**, Polyimidazole
RL: DEV (Device component use); USES (Uses)
(conductive polymer; inspection of polymer-covered **cathode** for Li **battery** by XPS for removal of inferior **cathode**)

IT **25233-34-5, Polythiophene 30604-81-0, Polypyrrole 82370-43-2**, Polyimidazole
RL: DEV (Device component use); USES (Uses)
(conductive polymer; inspection of polymer-covered **cathode** for Li **battery** by XPS for removal of inferior **cathode**)

RN 25233-34-5 HCAPLUS
CN Thiophene, homopolymer (9CI) (CA INDEX NAME)

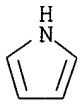
CM 1

CRN 110-02-1
CMF C4 H4 S

RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

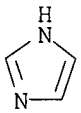
CRN 109-97-7
CMF C4 H5 N



RN 82370-43-2 HCAPLUS
CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 288-32-4
CMF C3 H4 N2



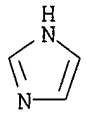
L149 ANSWER 51 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2001:924229 HCAPLUS
DN 136:46730
TI Methods for preparing non-corrosive, electroactive, conductive organic polymers
IN Kovalev, Igor P.; Sloane, Dawn M.; Trofimov, Boris A.
PA Moltech Corporation, USA
SO U.S. Pat. Appl. Publ., 9 pp.
CODEN: USXXCO
DT **Patent**
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 2001052591	A1	20011220	US 2001-803246	20010309 <--
US 6482334	B2	20021119		
PRAI US 2000-188327P	P	20000309 <--		

AB Provided are methods for preparing noncorrosive, electroactive, conductive organic polymers, such as for use in **electrochem. cells**, in which the noncorrosive polymers are formed by treatment of electroactive, conductive organic polymer compns., comprising corrosive anions, with sulfide anions. Also provided are noncorrosive conductive

organic polymers prepared by such methods, composite **cathodes** comprising such polymers, **electrochem. cells** comprising such **cathodes**, and methods of preparing such composite **cathodes** and **cells.**

IC ICM H01B0001-00
INCL 252500000
CC 76-2 (Electric Phenomena)
Section cross-reference(s): 38, 72
ST electroactive conductive org polymer **electrochem cell**
IT Conducting polymers
Electrochemical cells
(methods for preparing non-corrosive, electroactive, conductive organic polymers)
IT **Polyacetylenes**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(methods for preparing non-corrosive, electroactive, conductive organic polymers)
IT **Polyanilines**
RL: TEM (Technical or engineered material use); USES (Uses)
(methods for preparing non-corrosive, electroactive, conductive organic polymers)
IT Conducting polymers
(**polythiophenes**; methods for preparing non-corrosive, electroactive, conductive organic polymers)
IT Conducting polymers
RL: TEM (Technical or engineered material use); USES (Uses)
(**polythiophenes**; methods for preparing non-corrosive, electroactive, conductive organic polymers)
IT 79-06-1D, Acrylamide, polymer derivs. 88-12-0D, polymer derivs. 100-42-5D, Vinylbenzene, polymer derivs. 105-16-8D, Diethylaminoethyl methacrylate, polymer derivs. 110-02-1D, Thiophene, polymer derivs. 120-72-9D, Indole, polymer derivs. 1337-81-1D, Vinylpyridine, polymer derivs. 2873-97-4D, Diacetone acrylamide, polymer derivs. 7439-93-2, Lithium, uses 7440-44-0D, Carbon, lithium-intercalated 12798-95-7 25265-76-3D, Phenylene diamine, polymer derivs. **29383-23-1D**, Vinylimidazole, polymer derivs. **30604-81-0**, **Polypyrrole** 30917-44-3D, polymer derivs. 33611-56-2D, polymer salts 46231-82-7D, polymer salts 48042-45-1D, Diallyldimethylammonium, polymer salts 51441-64-6D, polymer salts 53680-59-4 56816-73-0D, polymer salts 67296-21-3D, Dimethylaminopropylmethacrylamide, polymer derivs. 128220-92-8D, polymer derivs.
RL: TEM (Technical or engineered material use); USES (Uses)
(methods for preparing non-corrosive, electroactive, conductive organic polymers)
IT **29383-23-1D**, Vinylimidazole, polymer derivs. **30604-81-0**, **Polypyrrole**
RL: TEM (Technical or engineered material use); USES (Uses)
(methods for preparing non-corrosive, electroactive, conductive organic polymers)
RN 29383-23-1 HCAPLUS
CN 1H-Imidazole, ethenyl- (9CI) (CA INDEX NAME)

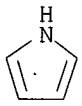


D1— CH═ CH_2

RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 109-97-7
CMF C4 H5 N



L149 ANSWER 52 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2001:904326 HCAPLUS
DN 136:38557
TI Polymer composition for membrane formation having electrochemical properties
IN Narang, Subhash; Ventura, Susanne C.; Olmeijer, David L.
PA SRI International, USA; Polyfuel, Inc.
SO PCT Int. Appl., 40 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2001094450	A2	20011213	WO 2001-US17675	20010601 <--
WO 2001094450	A3	20020704		
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
CA 2415614	A1	20011213	CA 2001-2415614	20010601 <--
AU 2001065278	A5	20011217	AU 2001-65278	20010601 <--
US 2002127454	A1	20020912	US 2001-872770	20010601 <--
US 7052805	B2	20060530		
EP 1290068	A2	20030312	EP 2001-939798	20010601 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2003535940	T	20031202	JP 2002-501997	20010601 <--

NO 2002005701 A 20030127 NO 2002-5701 20021127 <--
PRAI US 2000-208746P P 20000602 <--
WO 2001-US17675 W 20010601 <--

AB The invention includes compns. comprising at least first and second polymers and optionally a third polymer wherein acid subunits, basic subunits and elastomeric subunits are contained in the polymers. In one aspect, the composition comprises a ternary polymer blend comprising an acidic polymer comprising acidic subunits, a basic polymer comprising basic subunits and an elastomeric polymer comprising elastomeric subunits. In an alternate aspect, the composition comprises a binary polymer blend which comprises acidic or basic subunits in one polymer and a copolymer comprising the other of the acidic or basic subunit and an elastomeric subunit. Such polymer compns. may be formed into a membrane having electrochem. properties which permit the use of such a membrane in an electrochem. device.

IC ICM C08J0005-22
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 39

IT **Fuel cells**
Membrane electrodes
Membranes, nonbiological
(polymer compns. for membrane formation having **electrochem.** properties and **electrochem.** device applications)

IT **Ionic conductivity**
(**proton**; polymer compns. for membrane formation having electrochem. properties and electrochem. device applications)

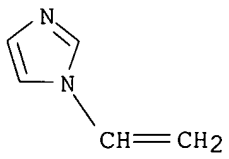
IT 75-03-6DP, Ethyliodide, reaction products with polybenzimidazole 24937-79-9P, PVDF 25014-41-9P, Polyacrylonitrile **25232-42-2P**, Polyvinylimidazole 54640-82-3P, 2-Acrylamido-2-methyl-1-propanesulfonic acid-acrylonitrile copolymer 101465-21-8P, Acrylonitrile-pentaerythritol triacrylate copolymer 103710-06-1P, Acrylonitrile-N-vinylimidazole-N-vinyl-2-pyrrolidone copolymer
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymer compns. for membrane formation having electrochem. properties and electrochem. device applications)

IT **25232-42-2P**, Polyvinylimidazole
RL: DEV (Device component use); PRP (Properties); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polymer compns. for membrane formation having electrochem. properties and electrochem. device applications)

RN 25232-42-2 HCAPLUS
CN 1H-Imidazole, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1072-63-5
CMF C5 H6 N2



L149 ANSWER 53 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2001:636401 HCAPLUS
DN 135:197999
TI Method of fabrication of polymer electrolyte membrane for **fuel cell**
IN Taniguchi, Takumi; Nakano, Mitsuru; Kawasumi, Masaya; Morimoto, Yu; Hasegawa, Naoki
PA Toyota Jidosha Kabushiki Kaisha, Japan
SO PCT Int. Appl., 28 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001063683	A2	20010830	WO 2001-IB231	20010221 <--
	WO 2001063683	A3	20020314		
	W: CN, KR, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	JP 2001236973	A	20010831	JP 2000-46541	20000223 <--
	EP 1258049	A2	20021120	EP 2001-910069	20010221 <--
	EP 1258049	B1	20051109		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI, CY, TR				
	US 2003087972	A1	20030508	US 2002-204481	20020821 <--
	US 7060735	B2	20060613		
PRAI	JP 2000-46541	A	20000223 <--		
	WO 2001-IB231	W	20010221 <--		

AB A polymer electrolyte membrane is formed by hot air drying of a membrane formed with an acidic main-polymer having **proton conductivity** and capability of forming an electrolyte membrane, and then immersing it into a basic polymer solution to impregnate the membrane with the basic polymer. The basic polymer is introduced in a large quantity into a site acting as a **proton conduction** pass of the main-polymer to take charge of the **proton conduction**. Since in the polymer electrolyte membrane, a base polymer takes charge of **proton conduction** as compared with the case where **proton** takes charge of the **proton conduction** as a hydrate, the base polymer shows favorable **proton conductivity** even in a low humidity state at an elevated temperature exceeding b.p. of water.

IC ICM H01M0008-10
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST polymer electrolyte membrane **fuel cell**
IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(fluorine- and sulfo-containing, ionomers; method of fabrication of polymer electrolyte membrane for **fuel cell**)
IT **Fuel cell electrolytes**
Fuel cells
(method of fabrication of polymer electrolyte membrane for **fuel cell**)
IT Polybenzimidazoles
Polyoxyalkylenes, uses
Polyphosphoric acids
RL: DEV (Device component use); USES (Uses)

(method of fabrication of polymer electrolyte membrane for **fuel cell**)

IT Sulfonic acids, uses
RL: DEV (Device component use); USES (Uses)
(perfluorosulfonic acid polymers; method of fabrication of polymer electrolyte membrane for **fuel cell**)

IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(polyoxyalkylene-, sulfo-containing, ionomers; method of fabrication of polymer electrolyte membrane for **fuel cell**)

IT Ionomers
RL: DEV (Device component use); USES (Uses)
(polyoxyalkylenes, fluorine- and sulfo-containing; method of fabrication of polymer electrolyte membrane for **fuel cell**)

IT **Ionic conductivity**
(**proton**; method of fabrication of polymer electrolyte membrane for **fuel cell**)

IT Fluoropolymers, uses
RL: DEV (Device component use); USES (Uses)
(sulfo-containing; method of fabrication of polymer electrolyte membrane for **fuel cell**)

IT **9002-98-6 9003-47-8**, Polyvinyl pyridine
25232-42-2, Polyvinyl imidazole 25322-68-3, Polyethylene glycol
25322-69-4, Polypropylene glycol 31669-80-4, phosphonic acid, homopolymer 197895-58-2, Ethylene-styrene-tetrafluoroethylene graft copolymer 352431-32-4, Ethylene-tetrafluoroethylene-vinylpyridine graft copolymer 356771-74-9
RL: DEV (Device component use); USES (Uses)
(method of fabrication of polymer electrolyte membrane for **fuel cell**)

IT **9002-98-6 9003-47-8**, Polyvinyl pyridine
25232-42-2, Polyvinyl imidazole
RL: DEV (Device component use); USES (Uses)
(method of fabrication of polymer electrolyte membrane for **fuel cell**)

RN 9002-98-6 HCAPLUS
CN Aziridine, homopolymer (9CI) (CA INDEX NAME)

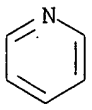
CM 1

CRN 151-56-4
CMF C2 H5 N

RN 9003-47-8 HCAPLUS
CN Pyridine, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1337-81-1
CMF C7 H7 N
CCI IDS

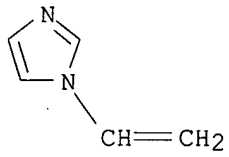


D1—CH═CH$_2$

RN 25232-42-2 HCAPLUS
CN 1H-Imidazole, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1072-63-5
CMF C5 H6 N2



L149 ANSWER 54 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2001:507813 HCAPLUS
DN 135:101125
TI Electronic device comprising organic compound having p-type semiconducting characteristics
IN Son, Se-Hwan; Kim, Ok-Hee; Yoon, Seok-Hee; Kim, Kong-Kyeom; Lee, Youn-Gu; Bae, Jae-Soon
PA LG Chemical Ltd., S. Korea
SO PCT Int. Appl., 27 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2001049806	A1	20010712	WO 2000-KR1537	20001227 <--
	W: JP, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR				
	KR 2001062711	A	20010707	KR 2000-82085	20001226 <--
	EP 1175470	A1	20020130	EP 2000-989016	20001227 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2003519432	T	20030617	JP 2001-550337	20001227 <--
	JP 3614405	B2	20050126		
	TW 506229	B	20021011	TW 2001-90111193	20010508 <--
	US 2002158242	A1	20021031	US 2001-914731	20010830 <--
	US 6720573	B2	20040413		
	CN 1361650	A	20020731	CN 2001-142044	20010906 <--
	US 2004164294	A1	20040826	US 2004-781076	20040217 <--
	US 6953947	B2	20051011		

US 2004169175 A1 20040902 US 2004-798584 20040310 <--
WO 2005078805 A1 20050825 WO 2005-KR449 20050217
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
EP 1716601 A1 20061102 EP 2005-726465 20050217
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, FI, RO, CY, TR, BG, CZ, EE, HU, PL, SK, IS
PRAI KR 1999-67746 A 19991231 <--
KR 2000-82085 A 20001226 <--
WO 2000-KR1537 W 20001227 <--
US 2001-914731 A2 20010830 <--
US 2004-781076 A 20040217
WO 2005-KR449 W 20050217

AB The present invention relates to electronic devices comprising an organic compound acting to inject or transport holes with p-type semi-conducting characteristics. The present invention provides for electronic devices comprising ≥1 or more layers selected from a group composed of a hole injecting layer, a hole transporting layer, and a hole injecting and transporting layer which comprises hexaazatriphenylene based organic compound represented by chemical formula, in which the devices can use low drive-voltage, and can improve a light-emitting life.

IC C09K0017-14
CC 76-5 (Electric Phenomena)
Section cross-reference(s): 75

IT **Polyanilines**
RL: DEV (Device component use); USES (Uses)
(conducting polymer; electronic device comprising organic compound hexaazatriphenylene having p-type semiconducting characteristics)

IT Poly(arylenealkenylenes)
RL: DEV (Device component use); USES (Uses)
(**poly**(**p-phenylene** vinylene), light-emitting layer; electronic device comprising organic compound hexaazatriphenylene having p-type semiconducting characteristics)

IT **Electrodes**
(transparent; electronic device comprising organic compound hexaazatriphenylene having p-type semiconducting characteristics)

IT **25233-34-5, Polythiophene 30604-81-0, Polypyrrole** 126213-51-2
RL: DEV (Device component use); USES (Uses)
(conducting polymer; electronic device comprising organic compound hexaazatriphenylene having p-type semiconducting characteristics)

IT **51-17-2**, Benzimidazole 273-53-0, Benzoxazole
RL: DEV (Device component use); USES (Uses)
(derivs. of, light-emitting layer; electronic device comprising organic compound hexaazatriphenylene having p-type semiconducting characteristics)

IT 7439-95-4, Magnesium, uses 7440-70-2, Calcium, uses 12798-95-7, Aluminum alloy, Al,Li 37334-02-4, Silver alloy, Mg,Ag
RL: DEV (Device component use); USES (Uses)
(low work function **cathode**; electronic device comprising organic compound hexaazatriphenylene having p-type semiconducting

characteristics)
IT 1314-13-2, Zinc oxide, uses 1332-29-2, Tin oxide 50926-11-9, Indium tin oxide 117944-65-7, Indium zinc oxide
RL: DEV (Device component use); USES (Uses)
(transparent **electrode**; electronic device comprising organic compound hexaazatriphenylene having p-type semiconducting characteristics)
IT **25233-34-5, Polythiophene 30604-81-0, Polypyrrole**
RL: DEV (Device component use); USES (Uses)
(conducting polymer; electronic device comprising organic compound hexaazatriphenylene having p-type semiconducting characteristics)
RN 25233-34-5 HCAPLUS
CN Thiophene, homopolymer (9CI) (CA INDEX NAME)

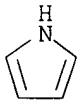
CM 1

CRN 110-02-1
CMF C4 H4 S

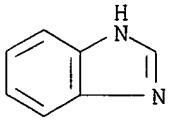
RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 109-97-7
CMF C4 H5 N



IT **51-17-2**, Benzimidazole
RL: DEV (Device component use); USES (Uses)
(derivs. of, light-emitting layer; electronic device comprising organic compound hexaazatriphenylene having p-type semiconducting characteristics)
RN 51-17-2 HCAPLUS
CN 1H-Benzimidazole (9CI) (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File

Mitsui Petrochem Ind Lt	1995			JP 711249 A	
Pioneer Electronic Corp	1994			JP 06163158 A	HCAPLUS
Univ Ohio State Res Fou	1988			US 4780536 A	HCAPLUS

L149 ANSWER 55 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:772374 HCAPLUS
DN 133:343293
TI Ionic-conducting polymer-ceramic composites
IN Nicoloso, Norbert; Kerres, Jochen
PA Universitaet Stuttgart, Germany
SO Ger. Offen., 6 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 19919988	A1	20001102	DE 1999-19919988	19990430 <--
	CA 2372693	A1	20001221	CA 2000-2372693	20000502 <--
	WO 2000077080	A1	20001221	WO 2000-EP3911	20000502 <--
	W: BR, CA, JP, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 1181327	A1	20020227	EP 2000-925253	20000502 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	US 2002093008	A1	20020718	US 2001-984531	20011030 <--
	US 2004251450	A1	20041216	US 2004-870156	20040618 <--
PRAI	DE 1999-19919988	A	19990430 <--		
	WO 2000-EP3911	W	20000502 <--		
	US 2001-984531	B1	20011030 <--		

AB **Proton-conducting** or hydroxyl ion-**conducting** polymer-ceramic composites comprise polymers and ceramic nano-particles (1-100 Nm), and are suitable for ionic **conductors**, **fuel cells**, secondary **batteries**, **electrochem.** sensors, medical goods and electrocatalysis. The title composites have a sufficiently high mech. stability up to 300°. The polymers suitable for this composites include groups of NR4 with R = H, alkyl, aryl, pyridine, imidazole, pyrazole, sulfone.
IC ICM B01D0069-00
ICS B01D0067-00; C04B0035-00
CC 76-2 (**Electric** Phenomena)
Section cross-reference(s): 38, **52**, 57, 63, **72**
ST **proton conducting** polymer ceramic composite; hydroxyl ion **conducting** polymer ceramic composite
IT **Fuel cells**
Ionic conductors
Medical goods
Nanoparticles
Secondary batteries
(ionic-conducting polymer-ceramic composites)
IT **Ionic conductivity**
(**proton**; ionic-**conducting** polymer-ceramic composites)
IT 64-17-5P, Ethanol, preparation 67-56-1P, Methanol, preparation 1307-96-6P, Cobalt oxide, preparation 1309-48-4P, Magnesium oxide, preparation 1313-13-9P, Manganese oxide, preparation 1313-99-1P, Nickel oxide, preparation 1314-13-2P, Zinc oxide, preparation 1345-25-1P, Iron oxide FeO, preparation 11118-57-3P, Chromium oxide

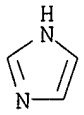
12651-06-8P, Samarium oxide 12770-85-3P, Europium oxide 31694-16-3P, Victrex Peek **82370-43-2P**, Poly imidazole **105809-46-9P**, Poly pyrazole **128611-68-7P**, Oxazole, homopolymer 154281-38-6P, RADEL R
RL: IMF (Industrial manufacture); PREP (Preparation)
(polymer-ceramic composites; ionic-conducting polymer-ceramic composites)

IT **82370-43-2P**, Poly imidazole **105809-46-9P**, Poly pyrazole **128611-68-7P**, Oxazole, homopolymer
RL: IMF (Industrial manufacture); PREP (Preparation)
(polymer-ceramic composites; ionic-conducting polymer-ceramic composites)

RN 82370-43-2 HCAPLUS
CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

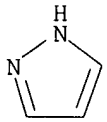
CRN 288-32-4
CMF C3 H4 N2



RN 105809-46-9 HCAPLUS
CN 1H-Pyrazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 288-13-1
CMF C3 H4 N2



RN 128611-68-7 HCAPLUS
CN Oxazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 288-42-6
CMF C3 H3 N O

L149 ANSWER 56 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:665699 HCAPLUS
DN 133:254952

TI Polymer electrolyte for lithium secondary **batteries**
IN Oyama, Noboru
PA Japan
SO Eur. Pat. Appl., 32 pp.
CODEN: EPXXDW
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 1037294	A2	20000920	EP 2000-105773	20000317 <--
	EP 1037294	A3	20030730		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
	JP 2001189166	A	20010710	JP 2000-70790	20000314 <--
	CA 2301414	A1	20000917	CA 2000-2301414	20000316 <--
	US 6509122	B1	20030121	US 2000-527569	20000316 <--
	CN 1267683	A	20000927	CN 2000-104319	20000317 <--
	AU 770639	B2	20040226	AU 2000-22331	20000317 <--
	US 2003082458	A1	20030501	US 2002-227532	20020826 <--
	US 7105254	B2	20060912		
PRAI	JP 1999-71758	A	19990317 <--		
	JP 1999-295503	A	19991018 <--		
	US 2000-527569	A3	20000316 <--		

AB A polymer electrolyte providing lithium secondary **batteries** in which growth of lithium dendrites is suppressed and **batteries** exhibiting excellent discharge characteristics in low to high temperature, comprises a polymer gel holding a nonaq. solvent containing an electrolyte. The polymer gel comprises (I) a unit derived from at least one monomer having one copolymerizable vinyl group and (II) a unit derived from at least one compound selected from the group consisting of (II-a) a compound having two acryloyl groups and a (poly)oxyethylene group, (II-b) a compound having one acryloyl group and a (poly)oxyethylene group, and (II-c) a glycidyl ether compound, particularly the polymer gel comprises monomer (I), compound (II-a), and a copolymerizable plasticizing compound

IC ICM H01M0006-18
ICS C08L0071-02
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76
ST lithium **battery** polymer electrolyte
IT Pyridinium compounds
RL: DEV (Device component use); USES (Uses)
(alkyl; polymer electrolyte for lithium secondary **batteries**)
IT **Secondary batteries**
(lithium; polymer electrolyte for lithium secondary **batteries**
)
IT **Battery electrolytes**
Capacitors
Polymer electrolytes
(polymer electrolyte for lithium secondary **batteries**)
IT Amides, uses
Lactones
Nitriles, uses
Polyanilines
RL: DEV (Device component use); USES (Uses)
(polymer electrolyte for lithium secondary **batteries**)
IT Phosphonium compounds
Quaternary ammonium compounds, uses
RL: DEV (Device component use); USES (Uses)
(tetraalkyl; polymer electrolyte for lithium secondary

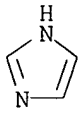
batteries)

IT 96-48-0, γ-Butyrolactone 96-49-1, Ethylene carbonate 108-32-7, Propylene carbonate **288-32-4D**, Imidazole, alkyl derivative 1072-71-5, 2,5-Dimercapto-1,3,4-thiadiazole 7439-93-2, Lithium, uses 7791-03-9, Lithium perchlorate 9063-88-1, Blemmer PDE 400-methyl methacrylate copolymer 14283-07-9, Lithium tetrafluoroborate 21324-40-3, Lithium hexafluorophosphate 25101-19-3, Methylmethacrylate-triethylene glycol dimethacrylate copolymer **25233-30-1**, **Polyaniline** 25777-71-3, Blemmer PDE 50-methyl methacrylate copolymer 27308-26-5, Blemmer PDE 100-methyl methacrylate copolymer 29403-27-8 29935-35-1, Lithium hexafluoroarsenate 33454-82-9, Lithium triflate 35895-69-3, Tetraethylammonium trifluoromethanesulfonate 59049-11-5, Blemmer PME 150-methyl methacrylate copolymer 72892-39-8, Blemmer PE 200-methyl methacrylate copolymer 81381-02-4, Acrylonitrile-triethylene glycol dimethacrylate copolymer 90076-65-6 114388-54-4, Cyclohexyl methacrylate-methyl methacrylate-triethylene glycol dimethacrylate copolymer 129283-05-2 130425-25-1, Blemmer PME 100-methyl methacrylate copolymer 131651-65-5 132404-42-3 144442-23-9 294189-08-5 294189-09-6, Methyl methacrylate-2-methacryloyloxyethyl phthalate-triethylene glycol dimethacrylate copolymer 294189-10-9, Benzyl methacrylate-methyl methacrylate-triethylene glycol dimethacrylate copolymer 294189-11-0, Isobornyl methacrylate-methyl methacrylate-triethylene glycol dimethacrylate copolymer 294189-12-1 294189-13-2 294189-14-3, 2-Diethylaminoethyl methacrylate-methyl methacrylate-triethylene glycol dimethacrylate copolymer 294189-15-4, Methyl methacrylate-triethylene glycol dimethacrylate-trifluoroethyl methacrylate copolymer 294189-16-5, Diethylene glycol monomethacrylate-methyl methacrylate-triethylene glycol dimethacrylate copolymer 294189-17-6, Methoxyethyleneglycol methacrylate-methyl methacrylate-triethylene glycol dimethacrylate copolymer 294189-18-7 294189-20-1
RL: DEV (Device component use); USES (Uses)
(polymer electrolyte for lithium secondary **batteries**)

IT 78-67-1, AIBN
RL: TEM (Technical or engineered material use); USES (Uses)
(polymerization initiator; polymer electrolyte for lithium secondary **batteries**)

IT **288-32-4D**, Imidazole, alkyl derivative **25233-30-1**, **Polyaniline**
RL: DEV (Device component use); USES (Uses)
(polymer electrolyte for lithium secondary **batteries**)

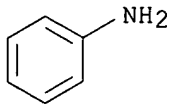
RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 62-53-3
CMF C6 H7 N



L149 ANSWER 57 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:539781 HCAPLUS
DN 133:122809
TI **Proton conductive** solid polymer electrolytes
IN **Nishiyama, Toshihiko**; Harada, Manabu; Fujiwara, Masaki; Okada, Shinako; Kurosaki, Masahito; Tsuchida, Hidetoshi; Takeoka, Shinji; Miyatake, Kenji; Fukushima, Kazuaki
PA NEC Corp., Japan
SO Jpn. Tokkyo Koho, 7 pp.
CODEN: JTXXFF
DT **Patent**
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 3047973	B1	20000605	JP 1999-36371	19990215 <--
JP 2000235812	A	20000829		
PRAI JP 1999-36371		19990215 <--		

AB The electrolytes contain a carbonate ester polymer -(OCOOR1)-n (R1 = C1-20 organic residue which may contain N, O, P, S, F, Cl, Br, and/or I; n = d.p. ≥2) and sulfonic acid compds. -R2SO3H- or -[R3(SO3H)m]-p (R2 and R3 = C1-20 organic residue which may contain N, O, P, S, F, Cl, Br, and/or I; m =0.01-4; p = d.p. ≥20). The electrolytes are useful for **batteries** and **fuel cells**.
IC ICM H01B0001-06
ICS C08G0064-02; H01M0008-02; H01M0010-40; C08L0101-12
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
ST **proton conductive** polymer electrolyte; carbonate ester polymer sulfonate **proton conductive** electrolyte
IT **Battery electrolytes**
Fuel cell electrolytes
Polymer electrolytes
(compns. of **proton conductive** solid polymer electrolytes for **batteries** and **fuel cells**)
IT 375-73-5, Perfluorobutanesulfonic acid 1763-23-1, Perfluorooctanesulfonic acid 25233-34-5D, **Polythiophene**, sulfonated 25718-55-2, Poly(ethylene carbonate) 25805-40-7, Poly(butylene carbonate) 26041-91-8, Poly(ethylene carbonate) 110320-40-6, Poly(propylene carbonate)
RL: DEV (Device component use); USES (Uses)
(compns. of **proton conductive** solid polymer electrolytes for **batteries** and **fuel cells**)

L149 ANSWER 58 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:511869 HCAPLUS
DN 133:137838
TI **Electrodes** containing conducting polymers and their manufacture and secondary **batteries** using them
IN Kurosaki, Masahito; Okada, Shinako; Harada, Manabu; Fujiwara, Masaki; **Nishiyama, Toshihiko**

PA NEC Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 12 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 2000208136	A	20000728	JP 1999-6382	19990113 <--
JP 3058157	B2	20000704		
PRAI JP 1999-6382		19990113 <--		

AB The **electrodes** are manufactured by coating active mass containing polymers on current collectors, partitioning the coating into plural parts, and then drying, where the polymers have **proton** adsorption-desorption properties and/or redox reactivity by doping-dedoping of ions other than **proton**. Resulting **electrodes** have increased capacity per unit area and ratio of **electrodes** vs. **batteries**, and are suitable for enlargement of **batteries**. Secondary **batteries** equipped with the **electrodes** are also claimed. Also claimed **batteries** comprise polymers containing π conjugation in the main chains and having elec. **conductivity** as **conductive** agents.
IC ICM H01M0004-04
ICS H01M0004-02; H01M0004-60; H01M0004-62; H01M0010-40
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST conducting polymer **electrode** manuf **battery**
IT **Battery electrodes**
Conducting polymers
(**electrodes** containing conducting polymers manufactured by coating and partitioning for secondary **batteries**)
IT **Secondary batteries**
(lithium; **electrodes** containing conducting polymers manufactured by coating and partitioning for secondary **batteries**)
IT 111641-58-8
RL: DEV (Device component use); USES (Uses)
(**electrodes** containing conducting polymers manufactured by coating and partitioning for secondary **batteries**)

L149 ANSWER 59 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:457136 HCAPLUS
DN 133:75087
TI Method for production of polyelectrolyte membranes for **fuel cell**
IN Yamamoto, Tetsu
PA Axiva G.m.b.H., Germany
SO PCT Int. Appl., 22 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2000039202	A1	20000706	WO 1999-EP9831	19991211 <--
W: BR, CA, CN, CZ, JP, KR, MX, PL, RU, SG, US				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
JP 2000195528	A	20000714	JP 1998-371554	19981225 <--
CA 2355856	A1	20000706	CA 1999-2355856	19991211 <--

	BR 9916818	A	20011016	BR 1999-16818	19991211 <--
	EP 1144485	A1	20011017	EP 1999-965448	19991211 <--
	EP 1144485	B1	20031119		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	JP 2002533890	T	20021008	JP 2000-591108	19991211 <--
	AT 254643	T	20031215	AT 1999-965448	19991211 <--
	PT 1144485	T	20040430	PT 1999-965448	19991211 <--
	ES 2209546	T3	20040616	ES 1999-965448	19991211 <--
PRAI	JP 1998-371554	A	19981225 <--		
	WO 1999-EP9831	W	19991211 <--		

AB The patent relates to a method for producing a polyelectrolyte membrane, including the step of immersing a basic polymer such as a polybenzimidazole in a strong acid having a concentration sufficient to impregnate the basic polymer with six or more strong acid mols. per polymer repeating unit of the basic polymer at a temperature ≥30° for a period of 5 h or less, as well as a fuel **battery** having the polyelectrolyte membrane. Hence, the times required to immerse the basic polymers in the strong acids (phosphoric acid or sulfuric acid) can be shortened and the **proton conductivity** of the polyelectrolyte membranes can be improved. The basic polymer is selected from the group consisting of polybenzimidazoles, polypyridines, polypyrimidines polyimidazoles, polybenzothiazoles, polybenzoxazoles, polyoxadiazoles, polyquinolines, **polyquinoxalines**, polythiadiazoles, polytetrazapyrenes, polyoxazoles, polythiazoles, polyvinylpyridines, polyvinylimidazoles, and polybenzimidazoles. Thus, a polybenzimidazole membrane having a thickness of 50 μm was immersed in 85 weight% phosphoric acid at 40° for 1 h to yield a polyelectrolyte membrane, cut out in a circular piece of 7-cm diameter, sandwiched by two sheets of carbon **electrodes** for a **fuel cell** of the polyelectrolyte type, and hotpressed to yield a cell for fuel **battery**.

IC ICM C08J0005-22
ICS C25B0009-00; H01M0008-10

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): **72**, **76**

ST polybenzimidazole polyelectrolyte membrane **fuel cell** prodn; phosphoric sulfuric acid impregnated polybenzimidazole membrane

IT Polybenzimidazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinolines
Polyquinoxalines
Polythiazoles
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(basic polymer; method for production of polyelectrolyte membranes comprising)

IT Membranes, nonbiological
(elec. conductive; method for production of polyelectrolyte membranes and **fuel cell**)

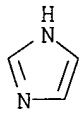
IT **Fuel cell electrodes**
Polyelectrolytes
(method for production of polyelectrolyte membranes for **fuel cell electrode**)

IT 95-16-9D, Benzothiazole, derivs., polymer **288-32-4D**, Imidazole, derivs., polymer 288-42-6D, Oxazole, derivs., polymer 289-06-5D, Thiadiazole, derivs., polymer **289-95-2D**, Pyrimidine, derivs., polymer **9003-47-8D**, Polyvinylpyridine, derivs. **25013-01-8D**, Polypyridine, derivs. **25232-42-2D**,

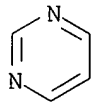
Polyvinylimidazole, derivs.
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(basic polymer; method for production of polyelectrolyte membranes comprising)

IT **288-32-4D**, Imidazole, derivs., polymer **289-95-2D**, Pyrimidine, derivs., polymer **9003-47-8D**, Polyvinylpyridine, derivs. **25013-01-8D**, Polypyridine, derivs. **25232-42-2D**, Polyvinylimidazole, derivs.
RL: RCT (Reactant); TEM (Technical or engineered material use); RACT (Reactant or reagent); USES (Uses)
(basic polymer; method for production of polyelectrolyte membranes comprising)

RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



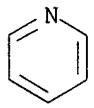
RN 289-95-2 HCAPLUS
CN Pyrimidine (8CI, 9CI) (CA INDEX NAME)



RN 9003-47-8 HCAPLUS
CN Pyridine, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1337-81-1
CMF C7 H7 N
CCI IDS

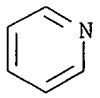


D1—CH═CH$_2$

RN 25013-01-8 HCAPLUS
CN Pyridine, homopolymer (9CI) (CA INDEX NAME)

CM 1

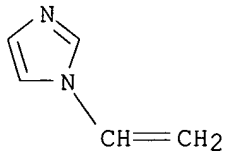
CRN 110-86-1
CMF C5 H5 N



RN 25232-42-2 HCAPLUS
CN 1H-Imidazole, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1072-63-5
CMF C5 H6 N2



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Hoechst Celanese Corp	1998			WO 9814505 A	HCAPLUS
Ogata, N	1997			US 5599639 A	HCAPLUS
Univ Case Western Reser	1996			WO 9613872 A	HCAPLUS
Univ Case Western Reser	1997			WO 9737396 A	HCAPLUS
Wainright, J	1995	142	121	JOURNAL OF THE ELECT	
Wang, J	1996	41	193	ELECTROCHIMICA ACTA	HCAPLUS
Young, P	1989			US 4795536 A	HCAPLUS

L149 ANSWER 60 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:335691 HCAPLUS
DN 132:323960
TI Materials for use in **proton-conducting** polymer electrolytes for electrochromic devices, rechargeable **batteries** and **fuel cells**
IN Brochu, Fernand; Duval, Michel
PA Hydro-Quebec, Can.
SO PCT Int. Appl., 21 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI WO 2000028611	A1	20000518	WO 1999-CA1022	19991102 <--
W: CA, JP				
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
PRAI US 1998-186138	A	19981105 <--		

AB Organophosphoric materials obtained from the reaction of orthophosphoric acid with various organic reagents, including acetonitrile, acrylonitrile, a low mol. weight ether, a low mol. weight alc., or mixts. thereof are materials

for use in **proton-conducting** polymer electrolytes.
The novel organophosphoric materials have the beneficial effect of preventing the degradation of the polymers while still providing excellent ionic **conductivity**

IC ICM H01M0008-10
ICS H01M0010-40; H01M0006-18; G02F0001-15; C07F0009-09

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST organophosphoric material **proton conducting** polymer electrolyte; electrochromic device organophosphoric material electrolyte; **battery** organophosphoric material electrolyte; **fuel cell** organophosphoric material electrolyte

IT Polysulfones, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(aromatic; materials for use in **proton-conducting** polymer electrolytes for electrochromic devices, rechargeable **batteries** and **fuel cells**)

IT Alcohols, uses
Ethers, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(low mol. weight, reaction product with inorg. acid; materials for use in **proton-conducting** polymer electrolytes for electrochromic devices, rechargeable **batteries** and **fuel cells**)

IT **Battery electrolytes**
Conducting polymers
Electrochromic devices
Fuel cell electrolytes
(materials for use in **proton-conducting** polymer electrolytes for electrochromic devices, rechargeable **batteries** and **fuel cells**)

IT Acrylic polymers, uses
Fluoropolymers, uses
Polyamides, uses
Polybenzimidazoles
Polyethers, uses
Polyimides, uses
Polythioarylenes
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(materials for use in **proton-conducting** polymer electrolytes for electrochromic devices, rechargeable **batteries** and **fuel cells**)

IT Sulfonic acids, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(perfluorosulfonic acid polymers; materials for use in **proton -conducting** polymer electrolytes for electrochromic devices, rechargeable **batteries** and **fuel cells**)

IT Fluoropolymers, uses
Fluoropolymers, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(sulfo-containing; materials for use in **proton-conducting** polymer electrolytes for electrochromic devices, rechargeable **batteries** and **fuel cells**)

IT 7631-86-9, Aerosil, uses

RL: MOA (Modifier or additive use); USES (Uses)
(colloidal; materials for use in **proton-conducting** polymer electrolytes for electrochromic devices, rechargeable **batteries** and **fuel cells**)

IT 9010-79-1, Ethylene-propylene copolymer
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(fluorinated; materials for use in **proton-conducting** polymer electrolytes for electrochromic devices, rechargeable **batteries** and **fuel cells**)

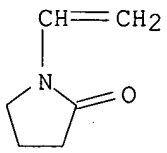
IT 75-05-8D, Acetonitrile, reaction product with orthophosphoric acid, uses
107-13-1D, Acrylonitrile, reaction product with orthophosphoric acid
7601-90-3D, Perchloric acid, reaction product with organic reagent, uses
7664-38-2D, Orthophosphoric acid, reaction product with acetonitrile
7664-38-2D, Orthophosphoric acid, reaction product with organic reagent
7664-93-9D, Sulfuric acid, reaction product with organic reagent, uses
9002-89-5, Pva 9003-05-8, Polyacrylamide 9003-20-7, Polyvinyl acetate
9003-39-8 9003-47-8, Polyvinylpyridine 24937-79-9,
Pvdf 57271-36-0, Butylene-ethylene-styrene copolymer 90622-00-7D,
Benzene, ethenyl-, trifluoro derivative, sulfonic acid derivative
105809-46-9D, Polypyrazole, aromatic derivative
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(materials for use in **proton-conducting** polymer electrolytes for electrochromic devices, rechargeable **batteries** and **fuel cells**)

IT **9003-39-8 9003-47-8**, Polyvinylpyridine
105809-46-9D, Polypyrazole, aromatic derivative
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(materials for use in **proton-conducting** polymer electrolytes for electrochromic devices, rechargeable **batteries** and **fuel cells**)

RN 9003-39-8 HCAPLUS
CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

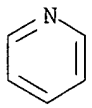
CRN 88-12-0
CMF C6 H9 N O



RN 9003-47-8 HCAPLUS
CN Pyridine, ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1337-81-1
CMF C7 H7 N
CCI IDS

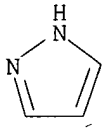


D1—CH═CH_2

RN 105809-46-9 HCAPLUS
CN 1H-Pyrazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 288-13-1
CMF C3 H4 N2



RETABLE

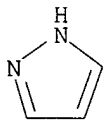
Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Anon	1991	015		PATENT ABSTRACTS OF	
Arribart, H	1989			US 4844591 A	
Hitachi, M	1996			EP 0704922 A	HCAPLUS
Hong, J	1998			US 5723645 A	HCAPLUS
J	1996	41	193	ELECTROCHIMICA ACTA	
Nissei Kagaku Kogyo Kk	1991			JP 03077859 A	HCAPLUS
No, B	1995			Preparation of cyano	HCAPLUS
Volgogradskij Politekhn	1993			SU 1828862 A	HCAPLUS
Young, P	1989			US 4795536 A	HCAPLUS
Zvi, R	1970		245	The chemistry of the	

L149 ANSWER 61 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 2000:176057 HCAPLUS
DN 132:224900
TI Element with electrically controllable surface emissivity for infrared radiation
IN Rothmund, Walter; Ortlepp, Katrin; Scherber, Werner; Leupolz, Andreas; Golly, Monika
PA Dornier G.m.b.H., Germany
SO PCT Int. Appl., 10 pp.
CODEN: PIXXD2
DT **Patent**
LA German
FAN.CNT 1

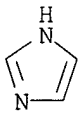
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000014811	A2	20000316	WO 1999-DE2257	19990722 <--
	WO 2000014811	A3	20001123		

W: US
RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL,

PT, SE
EP 1112595 A2 20010704 EP 1999-948666 19990722 <--
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI
PRAI DE 1998-19840183 A 19980903 <--
WO 1999-DE2257 W 19990722 <--
AB Elements with elec. controllable surface emissivity for IR radiation at 1-30 μm are described which comprise a front substrate transparent to IR radiation; a functional layer whose reflectivity for IR radiation can be modified by the incorporation of hydrogen; an anhydrous, IR-absorbing **proton-conducting** layer; a hydrogen storage layer; and an **electrode** layer. Application to controlling the thermal budget of spacecraft by adjusting the emission of heat or for regulating the temperature of homes or autos is indicated.
IC ICM H01L0031-00
CC 52-3 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): **73, 76**
IT **288-13-1**, Pyrazole **288-32-4**, Imidazole, uses
RL: DEV (Device component use); USES (Uses)
(**proton-conducting** layer containing; thermal regulation apparatus with elec. controllable surface emissivity for IR radiation)
IT **288-13-1**, Pyrazole **288-32-4**, Imidazole, uses
RL: DEV (Device component use); USES (Uses)
(**proton-conducting** layer containing; thermal regulation apparatus with elec. controllable surface emissivity for IR radiation)
RN 288-13-1 HCAPLUS
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



L149 ANSWER 62 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1999:665431 HCAPLUS
DN 131:260032
TI **Proton conduction** type polymer **batteries** and their manufacture
IN **Nishiyama, Toshihiko**; Harada, Manabu; Okada, Shinako; Fujiwara, Masaki
PA NEC Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 11 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 11288717	A	19991019	JP 1998-91519	19980403 <--
	JP 2943792	B1	19990830		
	US 6300015	B1	20011009	US 1999-285795	19990405 <--
	EP 966054	A1	19991222	EP 1999-106813	19990406 <--
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO				
PRAI	JP 1998-91519	A	19980403 <--		

AB The **batteries** use **cathodes** and **anodes** containing substances receiving and releasing electrons during a redox reaction and a solid or gel electrolyte, where the **cathodes** and **anode** use active mass mixts. containing a polymer having a conjugated π bond system including N atoms and a N containing quinoid compound and having different potentials, the electrolyte contains H+, and the **cathodes** are doped with the same anion as in the polymer matrix in the electrolyte. The **batteries** are prepared by doping the **cathode** active mass with the anion, assembling the doped **cathode** with an **anode**, and impregnating the assembly with the polymer or gel electrolyte.

IC ICM H01M0004-60
ICS H01M0004-02; H01M0004-04; H01M0010-40

CC 52-3 (**Electrochemical**, Radiational, and Thermal Energy Technology)

ST **proton conductive** polymer **battery** **cathode** doping

IT **Battery cathodes**
(**cathodes** from polymers doped with anionic components of electrolytes for **proton conductive** polymer **batteries**)

IT **Polyanilines**
RL: DEV (Device component use); USES (Uses)
(**cathodes** from polymers doped with anionic components of electrolytes for **proton conductive** polymer **batteries**)

IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(fluorine- and sulfo-containing, ionomers; **cathodes** from polymers doped with anionic components of electrolytes for **proton conductive** polymer **batteries**)

IT Polyoxyalkylenes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(fluorine-containing, sulfo-containing, ionomers; **cathodes** from polymers doped with anionic components of electrolytes for **proton conductive** polymer **batteries**)

IT Fluoropolymers, uses
Fluoropolymers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(polyoxyalkylene-, sulfo-containing, ionomers; **cathodes** from polymers doped with anionic components of electrolytes for **proton conductive** polymer **batteries**)

IT Ionomers
RL: MOA (Modifier or additive use); USES (Uses)
(polyoxyalkylenes, fluorine- and sulfo-containing; **cathodes** from polymers doped with anionic components of electrolytes for **proton conductive** polymer **batteries**)

IT **Battery electrolytes**
(trifluoroacetic acid electrolyte additives in **proton conductive** polymer **batteries**)

IT 25233-30-1, **Polyaniline**

RL: DEV (Device component use); USES (Uses)
(**cathodes** from polymers doped with anionic components of electrolytes for **proton conductive** polymer **batteries**)

IT 25233-30-1D, **Polyaniline**, nitro derivs. 245090-39-5
RL: MOA (Modifier or additive use); USES (Uses)
(**cathodes** from polymers doped with anionic components of electrolytes for **proton conductive** polymer **batteries**)

IT 76-05-1, Trifluoroacetic acid, uses
RL: MOA (Modifier or additive use); USES (Uses)
(electrolyte additives in **proton conductive** polymer **battery** using anionic electrolyte component doped polymer **cathodes**)

L149 ANSWER 63 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1999:375525 HCAPLUS
DN 131:59262
TI Perfluorocarbyl sulfoxide or sulfone salts and their use as ionic conductors
IN Michot, Christophe; Armand, Michel; Choquette, Yves; Gauthier, Michel
PA Acep Inc., Can.; Universite de Montreal; Centre National de la Recherche Scientifique
SO PCT Int. Appl., 66 pp.
CODEN: PIXXD2
DT **Patent**
LA French
FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9928292	A1	19990610	WO 1998-FR2585	19981201 <--
	W: CA, JP, US				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	CA 2224046	A1	19990601	CA 1997-2224046	19971201 <--
	CA 2228801	A1	19990803	CA 1998-2228801	19980203 <--
	CA 2279399	A1	19990610	CA 1998-2279399	19981201 <--
	EP 968181	A1	20000105	EP 1998-958294	19981201 <--
	EP 968181	B1	20050427		
	R: DE, FR, GB, IT				
	JP 2002500678	T	20020108	JP 1999-530206	19981201 <--
	EP 1626041	A2	20060215	EP 2005-23466	19990203 <--
	R: DE, FR, GB, IT				
	US 6620546	B1	20030916	US 1999-355454	19990924 <--
	US 2002009635	A1	20020124	US 2001-859784	20010516 <--
PRAI	CA 1997-2224046	A	19971201 <--		
	CA 1998-2228801	A	19980203 <--		
	WO 1998-FR2585	W	19981201 <--		
	CA 1998-2256945	A	19981218 <--		
	EP 1999-903554	A3	19990203 <--		
	US 1999-355454	A1	19990924 <--		

OS MARPAT 131:59262
AB An ionic composition comprises a salt dissolved in a solvent and has a **conductivity** >10-5 S/cm between -30 and +150°. The cation is a **proton**, hydronium, hydroxonium, nitrosonium (NO+), NH4+, or an organic or organometallic metal cation. The anion is a carbanion bearing a perfluorinated substituent or a substituent at least bearing a F on the α carbon of the carbanion, and two nonperfluorinated electron-withdrawing substituents. The composition can be used as an electrolyte in electrochem. devices, as a catalyst for chemical reactions,

and as a photochem. or thermochem. initiator for polymerization or crosslinking reactions. Thus, CH2(SO2Cl)2 was amidated with Me2NH, treated with NaH, condensed with (trifluoromethylsulfonyl)imidazole, and neutralized with K2CO3 to give (Me2NSO2)2C-(SO2CF3) K+, which was exchanged with LiCl to give (Me2NSO2)2C-(SO2CF3) Li+ (I), soluble in polar organic solvents and in poly(ethylene oxide) (II). A solution of I in II at O/Li = 12 shows ionic **conductivity** >10-4 S/cm at 60°; an acetone solution of I is a catalyst for the Diels-Alder reaction; and a combination of I with an ethylene oxide-allyl glycidyl ether-Me glycidyl ether copolymer at O/Li = 20 serves as an electrolyte in a Li **battery**. The analog Me2NSO2C-(SO2CF3)SO2C6H4CH:CH2-p Li+ was prepared and copolymd. 6:4 with acrylonitrile, and the resulting polymer 30, ethylene carbonate 35, and propylene carbonate 35% were combined to give a polyelectrolyte gel with ionic **conductivity** >10-4 S/cm at 30°.

IC ICM C07C0317-04
ICS C07D0339-06; C07D0311-82; C07C0317-12; C08G0061-02; C08F0232-04; H01M0010-40; H01M0006-16

CC 35-4 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 23, 24, 25, 28, **52**, 67

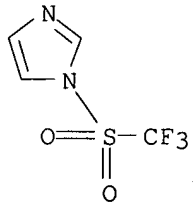
ST perfluoroalkyl sulfone ionic conductor; **battery** electrolyte perfluoroalkyl sulfone salt

IT **Battery electrolytes**
Diels-Alder reaction catalysts
Fuel cell electrolytes
Ionic conductors
(preparation of perfluorocarbyl sulfone salts as)

IT 111-92-2, Dibutylamine 124-40-3, reactions 335-05-7, Trifluoromethanesulfonyl fluoride 589-15-1, p-Bromobenzyl bromide 2633-67-2, p-Styrenesulfonyl chloride 5089-70-3, (3-Chloropropyl)triethoxysilane 5799-68-8, Methanedisulfonyl dichloride 26413-19-4, 1,3-Dithiolane 1,1,3,3-tetraoxide **29540-81-6** 31876-38-7D, Moniliformin, alkali metal salts 41804-89-1, Potassium triflinate 51270-39-4, 1-Bromo-N,N-dimethylmethanesulfonamide 65039-09-0, 1-Ethyl-3-methyl-1H-imidazolium chloride
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of perfluorocarbyl sulfone salts as ionic conductors)

IT **29540-81-6**
RL: RCT (Reactant); RACT (Reactant or reagent)
(preparation of perfluorocarbyl sulfone salts as ionic conductors)

RN 29540-81-6 HCAPLUS
CN 1H-Imidazole, 1-[(trifluoromethyl)sulfonyl]- (9CI) (CA INDEX NAME)



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Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Centre National Recherc	1998			EP 0850921 A	HCAPLUS
Centre National Recherc	1998			EP 0850932 A	HCAPLUS
Dominey, L	1993			US 5273840 A	HCAPLUS
Lee, H	1996			US 5538812 A	HCAPLUS

Ogoiko, P	1978		612	Chelate complexes of	HCAPLUS
Ogoiko, P	1977	43	1298	UKR KHIM ZH	HCAPLUS

L149 ANSWER 64 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1999:127081 HCAPLUS
DN 130:176356
TI Nonaqueous electrolyte for electrical storage devices
IN Mcewen, Alan B.; Ein-Eli, Yair
PA Covalent Associates, Inc., USA
SO PCT Int. Appl., 30 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9908299	A1	19990218	WO 1998-US16625	19980810 <--
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	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
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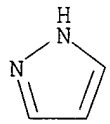
	EP 1027713	A1	20000816	EP 1998-938481	19980810 <--
	R: DE, FR, GB				
	JP 2001512903	T	20010828	JP 2000-506668	19980810 <--
PRAI	US 1997-910143	A	19970812 <--		
	WO 1998-US16625	W	19980810 <--		

OS MARPAT 130:176356
AB Nonaq. electrolytes for application in elec. storage devices such as **electrochem.** capacitors or **batteries** contain salts consisting of alkyl substituted, cyclic delocalized aromatic cations, and their perfluoro derivs., and certain polyat. anions having a Van der Waals volume ≤100 Å3, preferably inorg. perfluoride anions and most preferably PF6-, the salts being dissolved in organic liqs., and preferably alkyl carbonate solvents and/or liquid SO2, at a concentration >0.5M and preferably >1.0M. Exemplary electrolytes comprise 1-ethyl-3-methylimidazolium hexafluorophosphate dissolved in a cyclic or acyclic alkyl carbonate and/or Me formate. These electrolytes have useful characteristics such as higher conductivity, higher concentration, higher energy storage capabilities, and higher power characteristics compared to prior art electrolytes. Stacked capacitor **cells** using electrolytes of the invention permit high energy, high voltage storage.
IC ICM H01G0009-035
ICS H01G0009-145; H01M0006-16; C07F0005-02; C07F0009-02; C07F0009-54; C07C0309-71; C07C0309-73; C07D0211-04; C07D0231-10; C07D0231-54; C07D0233-54; C07D0237-02; C07D0237-26; C07D0239-02; C07D0239-70; C07D0241-06; C07D0241-36; C07D0249-08; C07D0249-16
CC 76-10 (Electric Phenomena)
Section cross-reference(s): 52
ST elec storage device nonaq electrolyte; capacitor **battery** nonaq electrolyte; ethylmethylimidazolium hexafluorophosphate cyclic alkyl carbonate electrolyte; Me formate ethylmethylimidazolium hexafluorophosphate electrolyte; alkyl acyclic carbonate ethylmethylimidazolium hexafluorophosphate electrolyte
IT **Battery electrolytes**
(nonaq.)
IT 96-49-1, Ethylene carbonate 107-31-3, Methyl formate 108-32-7, Propylene carbonate 110-86-1D, Pyridine, derivs., quaternary ammonium salts, uses **288-13-1D**, Pyrazole, derivs., quaternary ammonium

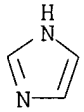
salts **288-32-4D**, Imidazole, derivs., quaternary ammonium salts
288-42-6D, Oxazole, derivs., quaternary ammonium salts 288-47-1D,
Thiazole, derivs., quaternary ammonium salts **288-88-0D**,
1H-1,2,4-Triazole, derivs., quaternary ammonium salts 289-80-5D,
Pyridazine, derivs., quaternary ammonium salts **289-95-2D**,
Pyrimidine, derivs., quaternary ammonium salts 290-37-9D, Pyrazine,
derivs., quaternary ammonium salts 616-38-6, Dimethyl carbonate
623-53-0, Ethyl methyl carbonate 4437-85-8, Butylene carbonate
7446-09-5, Sulfur dioxide, uses 143314-16-3, 1-Ethyl-3-methylimidazolium
tetrafluoroborate
RL: TEM (Technical or engineered material use); USES (Uses)
(in nonaq. electrolyte for elec. storage devices)

IT **288-13-1D**, Pyrazole, derivs., quaternary ammonium salts
288-32-4D, Imidazole, derivs., quaternary ammonium salts
288-88-0D, 1H-1,2,4-Triazole, derivs., quaternary ammonium salts
289-95-2D, Pyrimidine, derivs., quaternary ammonium salts
RL: TEM (Technical or engineered material use); USES (Uses)
(in nonaq. electrolyte for elec. storage devices)

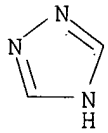
RN 288-13-1 HCAPLUS
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



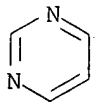
RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



RN 288-88-0 HCAPLUS
CN 1H-1,2,4-Triazole (7CI, 9CI) (CA INDEX NAME)



RN 289-95-2 HCAPLUS
CN Pyrimidine (8CI, 9CI) (CA INDEX NAME)



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Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Carlin	1994	141	L73	J Electrochem Soc	HCAPLUS
Endo	1992			JP 04-233211 A	HCAPLUS
McEwen	1997	144	L84	J Electrochem Soc	HCAPLUS
Ue	1994	141	2989	J Electrochem Soc	HCAPLUS

L149 ANSWER 65 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1998:466331 HCAPLUS
DN 129:136626
TI Salts of pentacyclic or tetraazapentalene-based anions for use as ionic conductors
IN Armand, Michel; Choquette, Yves; Gauthier, Michel; Michot, Christophe
PA Centre National de la Recherche Scientifique (CNRS), Fr.; Hydro-Quebec
SO Eur. Pat. Appl., 42 pp.
CODEN: EPXXDW
DT **Patent**
LA French
FAN.CNT 5

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PI	EP 850933	A1	19980701	EP 1997-403188	19971230 <--
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	CA 2199231	A1	19980905	CA 1997-2199231	19970305 <--
	CA 2244979	A1	19980709	CA 1997-2244979	19971230 <--
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	CA 2248303	A1	19980709	CA 1997-2248303	19971230 <--
	CA 2248304	A1	19980709	CA 1997-2248304	19971230 <--
	WO 9829358	A2	19980709	WO 1997-CA1008	19971230 <--
	WO 9829358	A3	19981008		
	W: CA, JP, US				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	WO 9829399	A1	19980709	WO 1997-CA1009	19971230 <--
	W: CA, JP, US				
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	W: CA, JP, US				
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	W: CA, JP, US				
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	W: CA, JP, US				
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	JP 2000508678	T	20000711	JP 1998-529518	19971230 <--
	JP 2002514245	T	20020514	JP 1998-529513	19971230 <--

	EP 1391952	A2	20040225	EP 2003-292436	19971230 <--
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	US 6171522	B1	20010109	US 1998-101811	19981119 <--
	US 6333425	B1	20011225	US 1998-101810	19981119 <--
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	US 6365068	B1	20020402	US 2000-609362	20000630 <--
	US 6576159	B1	20030610	US 2000-638793	20000809 <--
	US 2001024749	A1	20010927	US 2001-826941	20010406 <--
	US 6506517	B2	20030114		
	US 2002009650	A1	20020124	US 2001-858439	20010516 <--
	US 2002102380	A1	20020801	US 2002-107742	20020327 <--
	US 6835495	B2	20041228		
	US 2003052310	A1	20030320	US 2002-253035	20020924 <--
	US 2003066988	A1	20030410	US 2002-253970	20020924 <--
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	US 2005123831	A1	20050609	US 2004-926283	20040825 <--
PRAI	CA 1996-2194127	A	19961230 <--		
	CA 1997-2199231	A	19970305 <--		
	EP 1997-403188	A3	19971230 <--		
	WO 1997-CA1008	W	19971230 <--		
	WO 1997-CA1009	W	19971230 <--		
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	US 1998-101811	A3	19981119 <--		
	US 1998-125798	A3	19981202 <--		
	US 1998-125799	A3	19981202 <--		
	US 1998-125797	A1	19981203 <--		
	US 2000-638793	A1	20000809 <--		
	US 2001-858439	A1	20010516 <--		
	US 2002-107742	A1	20020327 <--		

OS MARPAT 129:136626

GI For diagram(s), see printed CA Issue.

AB Salts of metals, NO+, H3O+, or NH4+ with the heterocycles I [Xi = N, C, S or P derivs. (but ≤4 X = N)] or II (Y = electron-withdrawing group of specified structure) are ionic conductors, useful i.a., as catalysts for polymerization and other reactions or as colorants. The reaction of 1 mol aminiguanidine bicarbonate with 1.05 mol CF3CO2H in PhMe with azeotropic distn of H2O gave 92% 5-(trifluoromethyl)-1,3,4-triazole-2-amine, reaction of which with aqueous K2CO3 gave 100% of the corresponding anion salt. Uses of the products in the above applications are exemplified.

IC ICM C07D0249-04
ICS C07D0233-90; C07D0231-18; C07C0255-46; C07D0487-04; C07C0317-44; C07F0009-6584; C08G0065-22; C08G0077-04; C08F0220-44; C09K0003-00; H01M0006-16; H01M0010-40; C07B0041-00; C08F0004-00; C08J0003-24

ICI C07D0487-04, C07D0249-00, C07D0235-00

CC 35-3 (Chemistry of Synthetic High Polymers)
Section cross-reference(s): 28, 40, 67

IT **Battery electrolytes**
(anionic heterocycle salts as **battery** electrolytes)

IT **25233-30-1, Polyaniline**
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(doping of, with anionic imidazole salts)

IT **25979-00-4P** 210289-23-9P
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT

(Reactant or reagent)
(preparation and diazo reaction with Na cyanide)

IT **7343-34-2P**, 3,5-Dimethyl-1H-1,2,4-triazole
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(preparation and reaction with chlorine and hydrofluoric acid)

IT **709-62-6P** 64139-67-9P 156118-35-3DP, Dimethylsilanediol-methylsilanediol copolymer, reaction products with (difluorobutenyl)cyanotriazole **210289-24-0P** 210289-27-3P **210289-38-6P** 210289-52-4DP, reaction products with Me hydrogen polysiloxanes
RL: IMF (Industrial manufacture); PREP (Preparation)
(preparation of)

IT **1122-28-7**, 4,5-Dicyanoimidazole
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with benzoyl chloride and perfluorobutanesulfonyl fluoride)

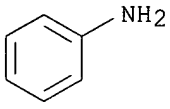
IT **4546-95-6**, 1,2,3-Triazole-4,5-dicarboxylic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with polyethylene glycol monododecyl ether)

IT **25233-30-1, Polyaniline**
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(doping of, with anionic imidazole salts)

RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

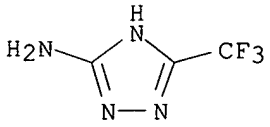
CM 1

CRN 62-53-3
CMF C6 H7 N



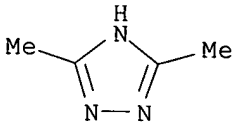
IT **25979-00-4P**
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(preparation and diazo reaction with Na cyanide)

RN 25979-00-4 HCAPLUS
CN 1H-1,2,4-Triazol-3-amine, 5-(trifluoromethyl)- (9CI) (CA INDEX NAME)

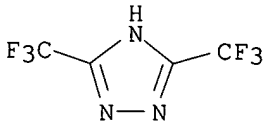


IT **7343-34-2P**, 3,5-Dimethyl-1H-1,2,4-triazole
RL: IMF (Industrial manufacture); RCT (Reactant); PREP (Preparation); RACT (Reactant or reagent)
(preparation and reaction with chlorine and hydrofluoric acid)

RN 7343-34-2 HCAPLUS
CN 1H-1,2;4-Triazole, 3,5-dimethyl- (9CI) (CA INDEX NAME)



IT **709-62-6P 210289-24-0P 210289-38-6P**
RL: IMF (Industrial manufacture); PREP (Preparation)
(preparation of)
RN 709-62-6 HCAPLUS
CN 1H-1,2,4-Triazole, 3,5-bis(trifluoromethyl)- (9CI) (CA INDEX NAME)



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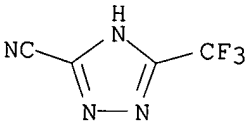

RN 210289-38-6 HCAPLUS
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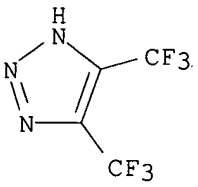
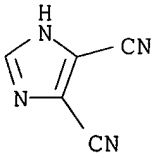
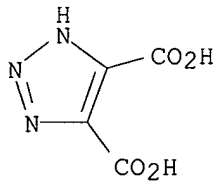


IT **1122-28-7**, 4,5-Dicyanoimidazole
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with benzoyl chloride and perfluorobutanesulfonyl fluoride)
RN 1122-28-7 HCAPLUS
CN 1H-Imidazole-4,5-dicarbonitrile (9CI) (CA INDEX NAME)



IT **4546-95-6**, 1,2,3-Triazole-4,5-dicarboxylic acid
RL: RCT (Reactant); RACT (Reactant or reagent)
(reaction with polyethylene glycol monododecyl ether)
RN 4546-95-6 HCAPLUS
CN 1H-1,2,3-Triazole-4,5-dicarboxylic acid (9CI) (CA INDEX NAME)



RETABLE

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Burchfield, H	1962			US 3054800 A	HCAPLUS
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Covalent Associates Inc				WO 9202966 A	HCAPLUS
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Lee, H				US 5538812 A	HCAPLUS
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Paprott, G	1988	121	727	CHEMISCHE BERICHTE	HCAPLUS
Sandoz Ag	1970			CH 484920 A	HCAPLUS
Webster, O	1966	88	4055	JOURNAL OF THE AMERI	HCAPLUS
Wiley, D	1976	41	1889	JOURNAL OF ORGANIC C	HCAPLUS

L149 ANSWER 66 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1998:221042 HCAPLUS
DN 128:244948
TI Preparation of acid-doped polymer films as electrolytes in **fuel cells**
IN Sansone, Michael J.; Onorato, Frank J.; French, Stuart M.; Marikar, Faruq
PA Hoechst Celanese Corp., USA; Sansone, Michael J.; Onorato, Frank J.; French, Stuart M.; Marikar, Faruq
SO PCT Int. Appl., 20 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 1

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	AU 9748939	A	19980424	AU 1997-48939	19970929 <--
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EP 954544 B1 20020327
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JP 2001517254 T 20011002 JP 1998-516869 19970929 <--
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PRAI US 1996-27169P P 19961001 <--
WO 1997-US17790 W 19970929 <--

AB The acid-doped polymer membranes such as polybenzimidazole are prepared by coagulating a polymeric dope solution in a liquid coagulation bath (containing solvent and/or nonsolvent); submerging the resulting membrane into a nonsolvent bath to remove any residual solvent; placing the membrane into an acid solution, wherein the pores are filled with the acid solution; and drying the membrane to remove residual nonsolvent which collapses the porous structure entrapping the acid and forming a dense film. An alternative method involves coagulating a polymer solution directly into an acid/solvent/nonsolvent mixture to produce a porous membrane which imbibes the acid solution and dried. Thus, a dope solution containing 10 g poly[2,2'-(m-phenylene)-5,5'-bibenzimidazole] and 90 g dimethylacetamide was coagulated in water to form a membrane, which was soaked in a 85% of phosphoric acid aq solution at 23° for 2 min, and dried to give a dense film containing 52% acid.

IC ICM C08J0005-22
ICS H01M0008-10
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 52, 76
ST acid doped polybenzimidazole electrolyte **fuel cell**;
polyphenylene benzimidazole doped film **fuel cell**;
phosphoric acid doped polyphenylene benzimidazole film

IT Polybenzimidazoles
Polybenzothiazoles
Polybenzoxazoles
Polyoxadiazoles
Polyquinoxalines
Polythiazoles
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(acid-doped; preparation of acid-doped polymer films as electrolytes in **fuel cells**)

IT **Electrolytic cells**
(membrane; preparation of acid-doped polymer films for)

IT **Fuel cell electrolytes**
Fuel cells
(preparation of acid-doped polymer films as electrolytes in **fuel cells**)

IT 110-86-1D, Pyridine, derivs., polymers, uses **288-32-4D**, Imidazole, derivs., polymers **289-95-2D**, Pyrimidine, derivs., polymers **9042-50-6 25734-65-0** 26101-19-9, 3,3'-Diaminobenzidine-isophthalic acid copolymer
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(acid-doped; preparation of acid-doped polymer films as electrolytes in **fuel cells**)

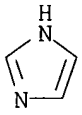
IT 7664-38-2, Phosphoric acid, uses
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(polybenzimidazole doped with; preparation of acid-doped polymer films as electrolytes in **fuel cells**)

IT 75-75-2, Methanesulfonic acid 7664-93-9, Sulfuric acid, uses

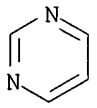
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(polymers doped with; preparation of acid-doped polymer films as electrolytes in **fuel cells**)

IT **288-32-4D**, Imidazole, derivs., polymers **289-95-2D**, Pyrimidine, derivs., polymers **9042-50-6 25734-65-0**
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(acid-doped; preparation of acid-doped polymer films as electrolytes in **fuel cells**)

RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)

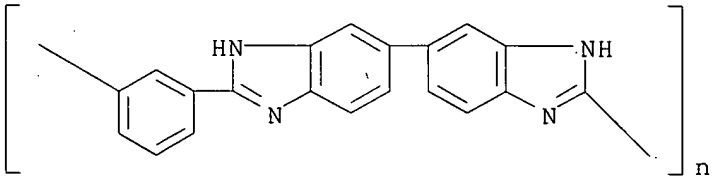


RN 289-95-2 HCAPLUS
CN Pyrimidine (8CI, 9CI) (CA INDEX NAME)



RN 9042-50-6 HCAPLUS
CN Poly[(13,18-dihydro-13,18-dioxoisoindolo[2,1-a]isoindolo[2',1':1,2]pyrimido[4,5,6-gh]perimidinediyl)-2,4,8,10-tetraoxaspiro[5.5]undecane-3,9-diyl] (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 25734-65-0 HCAPLUS
CN Poly([5,5'-bi-1H-benzimidazole]-2,2'-diyl-1,3-phenylene) (9CI) (CA INDEX NAME)



RETABLE

Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Sansone, M	1987			US 4693824 A	HCAPLUS
Sansone, M	1997			US 5599639 A	HCAPLUS
Univ Case Western Reser	1996			WO 9613872 A	HCAPLUS
Zupancic, J	1987			US 4664761 A	HCAPLUS

L149 ANSWER 67 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1998:135852 HCAPLUS

DN 128:187463
TI **Proton conductor** with wide-ranging thermal resistance and good **proton conductivity**, its preparation, and membranes using it
IN Kreuer, Klaus-Dieter; Fuchs, Annette; Maier, Joachim; Frank, Georg; Soczka-Guth, Thomas; Clauss, Joachim
PA Hoechst Research and Technology Deutschland GmbH and Co. KG, Germany
SO PCT Int. Appl., 26 pp.
CODEN: PIXXD2
DT **Patent**
LA German
FAN.CNT 1

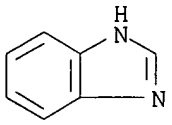
	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9807164	A1	19980219	WO 1997-EP4305	19970807 <--
	W: JP, US				
	RW: AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	DE 19632285	A1	19980219	DE 1996-19632285	19960809 <--
	EP 917716	A1	19990526	EP 1997-935572	19970807 <--
	EP 917716	B1	20031105		
	R: DE, FR, GB				
	JP 2000517462	T	20001226	JP 1998-509370	19970807 <--
	US 6264857	B1	20010724	US 1999-242036	19990702 <--
PRAI	DE 1996-19632285	A	19960809	<--	
	WO 1997-EP4305	W	19970807	<--	

AB The invention concerns **proton conductors** which contain 1-99% of an acid and 99-1% of a nonaq. amphoteric substance, are resistant to temps. of -50 to 400°, and have **proton conductivity** of 10-5 S/cm. The invention further concerns membranes containing the **proton conductors**, processes for preparing the membranes, and their use in **electrochem. cells**, secondary **batteries**, and electrochromic displays.
IC ICM H01B0001-12
ICS H01M0008-10; H01M0008-02
CC 76-2 (**Electric** Phenomena)
Section cross-reference(s): **52**, **72**, 74
ST **proton conductor** membrane prepn; acid nonaq amphoteric substance **proton conductor**
IT Amphoteric materials
(preparation of **proton conductors** for membranes containing)
IT Acids, processes
Naphthenic acids, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(preparation of **proton conductors** for membranes containing)
IT Membranes, nonbiological
(preparation of **proton conductors** with wide-ranging thermal resistance and good **proton conductivity** for)
IT Ionic **conductors**
(preparation of **proton conductors** with wide-ranging thermal resistance and good **proton conductivity** for membranes)
IT **Electrochemical cells**
Electrochromic imaging devices
Secondary batteries
(preparation of **proton conductors** with wide-ranging thermal resistance and good **proton conductivity** for membranes for)
IT **51-17-2**, Benzimidazole 121-57-3, Sulfanilic acid

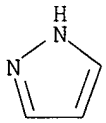
288-13-1, Pyrazole **288-32-4**, Imidazole, processes
1314-60-9, Antimony oxide (Sb2O5) 60015-03-4D, Hostatec, sulfonated
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(preparation of **proton conductors** for membranes containing)

IT **51-17-2**, Benzimidazole **288-13-1**, Pyrazole
288-32-4, Imidazole, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(preparation of **proton conductors** for membranes containing)

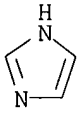
RN 51-17-2 HCAPLUS
CN 1H-Benzimidazole (9CI) (CA INDEX NAME)



RN 288-13-1 HCAPLUS
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



RETABLE

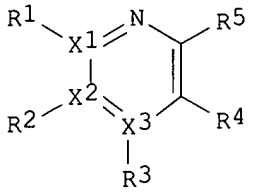
Referenced Author (RAU)	Year (RPY)	VOL (RVL)	PG (RPG)	Referenced Work (RWK)	Referenced File
Case Western Reserve Un	1996			WO 9613872 A	HCAPLUS
Nippon Gosei Gomu Kk	1997			JP 09087510 A	HCAPLUS
Samms, S	1996	143	1225	JOURNAL OF THE ELECT	HCAPLUS
Sansone, M	1997			US 5599639 A	HCAPLUS
Wainright, J	1996	2	1107	IECEC 96 PROCEEDINGS	
Wang, J	1995		202	PROCEEDINGS FO THE F	HCAPLUS

L149 ANSWER 68 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1997:536871 HCAPLUS
DN 127:222933
TI Electrolytes for secondary lithium **batteries** and the **batteries**
IN Tsutsumi, Masaki; Horiuchi, Hiroshi; Watanabe, Isao; Miyashita, Tsutomu

PA Fujitsu Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 09204932	A	19970805	JP 1996-11191	19960125 <--
	US 5731106	A	19980324	US 1996-653721	19960523 <--
PRAI	JP 1996-11191	A	19960125 <--		

OS MARPAT 127:222933
GI



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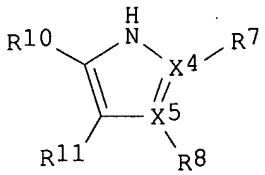
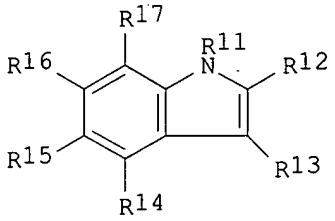


II



III

AB The electrolytes contain additives selected from I [X1-3 = N or C; R1-5 = H, halogen, C1-3 alkyl, Ph, or OH group; and R1 and R2 and/or R4 and R5 form benzene ring when they are alkyl groups (R1-3 does not exist when ≥1 of X1, X2, and X3 is N)], II [one of X4 and X5 is N and the other one is C, R6-10 = H, halogen, C1-3 alkyl, Ph, or OH groups (R7 or R8 does not exist when X4 or R5 is N, resp.)], or III (R11-17 = H, halogen, C1-3 alkyl, Ph, or OH groups). **Batteries** using these additives have high voltage and capacity and good charge discharge performance.

IC ICM H01M0010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST lithium **battery** electrolyte arom additive

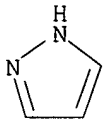
IT **Battery electrolytes**
(aromatic nitrogen compound additives in electrolytes for secondary lithium **batteries**)

IT 96-49-1, Ethylene carbonate 616-38-6, Dimethyl carbonate 17084-13-8, Potassium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(aromatic nitrogen compound additives in electrolytes for secondary lithium **batteries**)

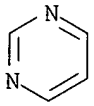
IT 91-19-0, Quinoxaline 92-82-0, Phenazine 120-72-9, Indole, uses 253-52-1, Phthalazine **288-13-1**, Pyrazole 289-80-5, Pyridazine **289-95-2**, Pyrimidine 290-37-9, Pyrazine 27175-64-0, Lutidine
RL: MOA (Modifier or additive use); USES (Uses)
(aromatic nitrogen compound additives in electrolytes for secondary lithium **batteries**)

IT **288-13-1**, Pyrazole **289-95-2**, Pyrimidine

RL: MOA (Modifier or additive use); USES (Uses)
(aromatic nitrogen compound additives in electrolytes for secondary lithium **batteries**)
RN 288-13-1 HCAPLUS
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



RN 289-95-2 HCAPLUS
CN Pyrimidine (8CI, 9CI) (CA INDEX NAME)

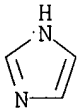


L149 ANSWER 69 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1997:9972 HCAPLUS
DN 126:133525
TI Supercapacitor **battery**
IN De Long, Hugh C.; Carlin, Richard T.
PA United States Dept. of the Air Force, USA
SO U.S., 6 pp.
CODEN: USXXAM
DT **Patent**
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 5585999	A	19961217	US 1994-317160	19940930 <--
PRAI US 1994-317160		19940930 <--		

AB The invention provides a thin-film Pd redox-active **cathode** in a supercapacitor configuration. A room-temperature chloroaluminate molten salt composed of an organic chloride, mixed with a molar excess of AlCl3, is used as the supercapacitor electrolyte. In this electrolyte, the Pd surface can be reversibly oxidized to an insol. thin-film of PdCl2. Reduction of this PdCl2 thin film back to Pd, generates a high c.d. The capacitance of this supercapacitor **electrode** is 150-550 times that of a double-layer capacitor **electrode**. By combining the thin-film Pd supercapacitor **cathode** with a suitable **anode**, e.g. Al **anode**, a high power supercapacitor **battery**, capable of delivering a charge at high c.d., at near constant voltage of .apprx.1 V, is provided. The **battery** of the invention can accordingly provide power for devices requiring pulsed elec. power, e.g. lasers and for numerous other systems of high current demand, e.g. starters for elec. vehicles.
IC ICM H01G0009-02
INCL 361505000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **battery** supercapacitor thin film palladium aluminum
IT **Battery electrolytes**

(organic chloride mixed with excess aluminum chloride)
IT **Secondary batteries**
(supercapacitor aluminum/thin-film palladium)
IT **17009-90-4D**, Imidazolium, derivs. 65039-09-0,
1-Ethyl-3-methylimidazolium chloride
RL: TEM (Technical or engineered material use); USES (Uses)
(**battery** electrolytes containing excess aluminum chloride)
IT 7446-70-0, Aluminum chloride, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**battery** electrolytes of organic chloride containing excess)
IT 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(supercapacitor **battery anode**)
IT 9003-53-6, Polystyrene **25233-34-5, Polythiophene**
30604-81-0, Polypyrrole
RL: TEM (Technical or engineered material use); USES (Uses)
(supercapacitor **battery anode**)
IT 7440-05-3, Palladium, uses
RL: DEV (Device component use); USES (Uses)
(supercapacitor **battery cathode** of thin-film)
IT **17009-90-4D**, Imidazolium, derivs.
RL: TEM (Technical or engineered material use); USES (Uses)
(**battery** electrolytes containing excess aluminum chloride)
RN 17009-90-4 HCAPLUS
CN 1H-Imidazole, conjugate monoacid (9CI) (CA INDEX NAME)



● H^+

IT **25233-34-5, Polythiophene 30604-81-0,**
Polypyrrole
RL: TEM (Technical or engineered material use); USES (Uses)
(supercapacitor **battery anode**)
RN 25233-34-5 HCAPLUS
CN Thiophene, homopolymer (9CI) (CA INDEX NAME)

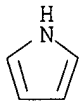
CM 1

CRN 110-02-1
CMF C4 H4 S

RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 109-97-7
CMF C4 H5 N



L149 ANSWER 70 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1996:354025 HCAPLUS
DN 125:25314
TI Odor sensor
IN Gibson, Timothy David; Puttick, Peter; Hulbert, John Neal; Marshall, Robert Wilson; Li, Zhuoshu
PA Mastiff Electronic Systems Ltd, UK
SO PCT Int. Appl., 34 pp.
CODEN: PIXXD2
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 9607901	A1	19960314	WO 1995-GB2117	19950906 <--
	W: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM				
	RW: KE, MW, SD, SZ, UG, AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG				
	AU 9535258	A	19960327	AU 1995-35258	19950906 <--
	EP 779979	A1	19970625	EP 1995-931275	19950906 <--
	EP 779979	B1	19991222		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LI, LU, MC, NL, PT, SE				
	AT 188035	T	20000115	AT 1995-931275	19950906 <--
	US 5928609	A	19990727	US 1997-793957	19970714 <--
PRAI	GB 1994-17913	A	19940906 <--		
	WO 1995-GB2117	W	19950906 <--		

AB A personnel recognition sensor comprises a multiplicity of differentially responding chemo-resistor elements, each element comprising a nonconductive substrate, a plurality of **electrodes** disposed on the substrate and one or more layers of a conductive polymer overlaying the **electrodes**, the conductive polymers of at least two of the elements being different; a detector responsive to signals provided by the multiplicity of elements and arranged to provide an output signal characteristic of the multiplicity of signals; the elements being disposed in a housing having an inlet arranged so that a gaseous sample passing into or through the inlet contacts all of the elements in use.
IC ICM G01N0033-00
CC 80-2 (Organic Analytical Chemistry)
Section cross-reference(s): 17, 62
ST odor sensor; **electrode** odor sensor
IT **Electrodes**
(in odor sensor)
IT **177580-33-5P 177580-35-7P 177580-37-9P**
177580-38-0P 177580-40-4P **177580-42-6P**

RL: ARU (Analytical role, unclassified); NUU (Other use, unclassified); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(for odor sensor)

IT 25168-37-0P **31177-31-8P** 72945-64-3P 89230-95-5P
RL: ARU (Analytical role, unclassified); DEV (Device component use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(for preparation of odor sensor)

IT 106-32-1P, Octanoic acid ethyl ester 1923-70-2P, Tetrabutylammonium perchlorate 14797-55-8P, Nitrate, analysis 14808-79-8P, Sulfate, analysis 16887-00-6P, Chloride, analysis **25233-30-1P**, **Polyaniline 27813-82-7P**, Polytryptophan 88374-64-5P, Poly-n-ethylaniline 177580-43-7P 177580-44-8P
RL: ARU (Analytical role, unclassified); NUU (Other use, unclassified); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(for preparation of odor sensor)

IT **82370-43-2P**
RL: ARU (Analytical role, unclassified); DEV (Device component use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(in preparation of polymer for odor sensor)

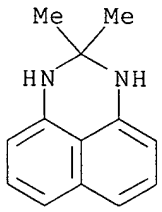
IT 91-22-5, Quinoline, reactions 96-54-8, 1-Methylpyrrole 101-54-2, N-Phenyl-1,4-phenylenediamine 109-97-7, Pyrrole **288-32-4**, Imidazole, reactions 540-24-9
RL: RCT (Reactant); RACT (Reactant or reagent)
(in preparation of polymer for odor sensor)

IT **177580-33-5P 177580-35-7P 177580-37-9P 177580-38-0P 177580-42-6P**
RL: ARU (Analytical role, unclassified); NUU (Other use, unclassified); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(for odor sensor)

RN 177580-33-5 HCAPLUS
CN 1H-Perimidine, 2,3-dihydro-2,2-dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

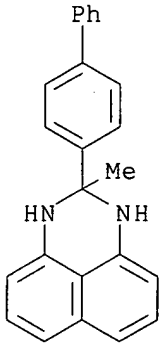
CRN 6364-17-6
CMF C13 H14 N2



RN 177580-35-7 HCAPLUS
CN 1H-Perimidine, 2-[1,1'-biphenyl]-4-yl-2,3-dihydro-2-methyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

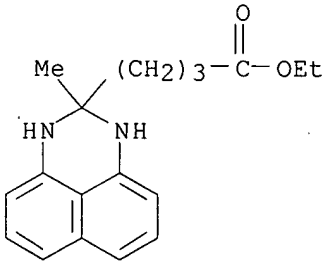
CRN 177580-34-6
CMF C24 H20 N2



RN 177580-37-9 HCAPLUS
CN 1H-Perimidine-2-butanoic acid, 2,3-dihydro-2-methyl-, ethyl ester, homopolymer (9CI) (CA INDEX NAME)

CM 1

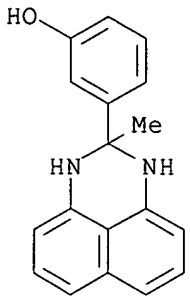
CRN 177580-36-8
CMF C18 H22 N2 O2



RN 177580-38-0 HCAPLUS
CN Phenol, 3-(2,3-dihydro-2-methyl-1H-perimidin-2-yl)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

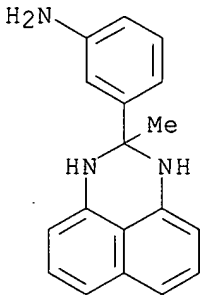
CRN 85557-38-6
CMF C18 H16 N2 O



RN 177580-42-6 HCAPLUS
CN Benzenamine, 3-(2,3-dihydro-2-methyl-1H-pyrimidin-2-yl)-, homopolymer (9CI) (CA INDEX NAME)

CM 1

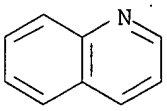
CRN 177580-41-5
CMF C18 H17 N3



IT **31177-31-8P**
RL: ARU (Analytical role, unclassified); DEV (Device component use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(for preparation of odor sensor)
RN 31177-31-8 HCAPLUS
CN Quinoline, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 91-22-5
CMF C9 H7 N

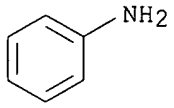


IT **25233-30-1P, Polyaniline 27813-82-7P,**
Polytryptophan
RL: ARU (Analytical role, unclassified); NUU (Other use, unclassified);

SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(for preparation of odor sensor)
RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 62-53-3
CMF C6 H7 N

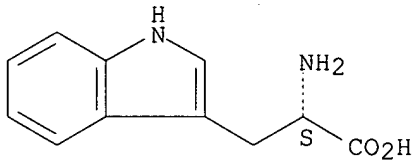


RN 27813-82-7 HCAPLUS
CN L-Tryptophan, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 73-22-3
CMF C11 H12 N2 O2

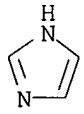
Absolute stereochemistry.



IT **82370-43-2P**
RL: ARU (Analytical role, unclassified); DEV (Device component use); SPN (Synthetic preparation); ANST (Analytical study); PREP (Preparation); USES (Uses)
(in preparation of polymer for odor sensor)
RN 82370-43-2 HCAPLUS
CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

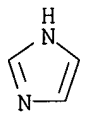
CM 1

CRN 288-32-4
CMF C3 H4 N2



IT **288-32-4**, Imidazole, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(in preparation of polymer for odor sensor)
RN 288-32-4 HCAPLUS

CN 1H-Imidazole (9CI) (CA INDEX NAME)



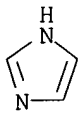
L149 ANSWER 71 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1995:758786 HCAPLUS
DN 123:138131
TI Shapable electrically conductive polymer film having adsorbed protein
IN Wernet, Wolfgang; Khan, Golam F.
PA Japat Ltd., Switz.
SO Eur. Pat. Appl., 32 pp.
CODEN: EPXXDW
DT **Patent**
LA English
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 658906	A2	19950621	EP 1994-810713	19941209 <--
	EP 658906	A3	19951102		
	R: BE, CH, DE, ES, FR, GB, IT, LI, NL, SE				
	CA 2138332	A1	19950619	CA 1994-2138332	19941216 <--
	JP 07190985	A	19950728	JP 1994-314980	19941219 <--
PRAI	GB 1993-25946	A	19931218 <--		

AB A shapable elec. conductive polymer film comprises (1) a film containing (a) ≥1 polyheteroarom. compound or aniline in oxidized, polycationic form and (b) ≥1 polyanion of a film-forming thermoplastic polymer containing COSO3 and/or CO(CnH2n)SO3 groups in repeating structural units, where the group (CnH2n) is linear or branched C2-12 alkylene containing 2-5 C atoms in the main chain, the alkylene being unsubstituted or substituted by C1-4 alkoxy; and (2) a protein adsorbed on the film. This film can be used in biosensors, bioreactors, and immunosensors.

IC ICM H01B0001-12
ICS C12N0011-08
CC 9-1 (Biochemical Methods)
Section cross-reference(s): 15, 38, 76
IT Biosensors
Electrodes
Films
Immobilization, biochemical
Plasma
(shapable elec. conductive polymer film having adsorbed proteins)
IT 62-53-3, Aniline, uses 62-53-3D, Aniline, derivs. 78-79-5, Isoprene, uses 79-10-7, Acrylic acid, uses 79-41-4, Methacrylic acid, uses 106-99-0, Butadiene, uses 109-97-7, Pyrrole 110-00-9, Furan 110-02-1, Thiophene 126-99-8, Chloroprene **288-32-4**, Imidazole, uses 288-42-6, Oxazole 288-47-1, Thiazole 289-06-5, Thiadiazole 492-97-7, 2,2'-Dithiophene 557-75-5, Vinyl alcohol, uses 5905-00-0, 2,2'-Bifuran 9003-01-4, Polyacrylic acid 10087-64-6, 2,2'-Bipyrrole 25087-26-7, Polymethacrylic acid **25233-34-5**, **Polythiophene** 31257-96-2, Vinyl phenol 59269-51-1, Polyvinyl phenol
RL: DEV (Device component use); USES (Uses)
(shapable elec. conductive polymer film having adsorbed proteins)
IT **288-32-4**, Imidazole, uses **25233-34-5**,

Polythiophene
RL: DEV (Device component use); USES (Uses)
(shapable elec. conductive polymer film having adsorbed proteins)
RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



RN 25233-34-5 HCAPLUS
CN Thiophene, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 110-02-1
CMF C4 H4 S

L149 ANSWER 72 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1993:584774 HCAPLUS
DN 119:184774
TI Lithium secondary **battery**
IN Fujimoto, Masahisa; Yoshinaga, Noriyuki; Ueno, Koji; Furukawa, Nobuhiro; Nohma, Toshiyuki; Takahashi, Masatoshi
PA Sanyo Electric Co., Ltd., Japan
SO Eur. Pat. Appl., 60 pp.
CODEN: EPXXDW
DT **Patent**
LA English
FAN.CNT 3

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 541889	A1	19930519	EP 1992-103986	19920309 <--
	EP 541889	B1	19980909		
	R: CH, DE, FR, GB, LI				
	JP 05013088	A	19930122	JP 1991-325778	19911210 <--
	JP 3369583	B2	20030120		
	JP 11224675	A	19990817	JP 1998-340492	19911210 <--
	JP 05211070	A	19930820	JP 1991-360254	19911227 <--
	JP 3229635	B2	20011119		
	JP 2002075451	A	20020315	JP 2001-213908	19911227 <--
	JP 3403184	B2	20030506		
	JP 2002075452	A	20020315	JP 2001-213909	19911227 <--
	JP 3408250	B2	20030519		
	CA 2064965	A1	19930513	CA 1992-2064965	19920402 <--
	CA 2064965	C	19970603		
	JP 2002075448	A	20020315	JP 2001-213905	20010713 <--
	JP 3374135	B2	20030204		
	JP 2002075449	A	20020315	JP 2001-213906	20010713 <--
	JP 3374136	B2	20030204		

JP 2002075450 A 20020315 JP 2001-213907 20010713 <--
JP 3374137 B2 20030204
PRAI JP 1991-295835 A 19911112 <--
JP 1991-319200 A 19911203 <--
JP 1991-325778 A 19911210 <--
JP 1991-360254 A 19911227 <--
JP 1990-401667 A1 19901212 <--

AB The **battery** includes a **cathode** of a Li-intercalatable compound, an **anode** of a carbonaceous material comprising mainly or only graphite, a separator, and an electrolyte of a Li salt in a solvent comprising ≥1 cyclic compound such as ethylene carbonate, ethylene thiocarbonate, γ-thiobutyrolactone, α-pyrrolidone, γ-butyrolactone, propylene carbonate, 1,2-butylene carbonate, etc. The graphite has an average particle diameter 1-30 μm, spacing of (002) planes 3.35-3.40 Å, crystallite size in c direction ≥150 Å, sp. surface area 0.5-50 m2/g, and true d. 1.9-2.3 g/cm3. The Li-intercalatable compound is LixMO2 or LiyM2O4, where M is a transition element, x≤1 and y≤2; metal oxide-, anion-, or halide-intercalated graphite; or a conductive polymer containing a dopant.

IC ICM H01M0004-58
ICS H01M0010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST lithium **battery** electrolyte solvent; electrolyte org lithium **battery**; graphite **anode** lithium **battery**; **anode** graphite lithium **battery**; transition metal lithium oxide **cathode**; polymer lithium intercalatable **battery** **cathode**

IT **Battery electrolytes**
(lithium salt in at least one cyclic organic compound)

IT **Batteries, secondary**
(lithium, high-performance and long cycle-life)

IT Carbon fibers, compounds
RL: USES (Uses)
(graphite, intercalation compds., with nitrate or sulfate, lithium-intercalatable, **cathodes**, in high-performance organic-electrolyte lithium **batteries**)

IT 7782-42-5, Graphite, uses
RL: USES (Uses)
(**anodes**, in high-performance organic-electrolyte lithium **batteries**)

IT 7440-44-0 7782-42-5
RL: USES (Uses)
(carbon fibers, graphite, intercalation compds., with nitrate or sulfate, lithium-intercalatable, **cathodes**, in high-performance organic-electrolyte lithium **batteries**)

IT 12031-65-1, Lithium nickel oxide (LiNiO2) 12057-17-9, Lithium manganese oxide (LiMn2O4) 12162-87-7D, Lithium vanadium oxide (LiVO2), graphite intercalated with 12190-79-3, Cobalt lithium oxide (CoLiO2) 15060-59-0D, Lithium vanadium oxide (LiVO3), graphite intercalated with 118321-27-0D, Lithium molybdenum oxide (Li0.3MoO3), graphite intercalated with
RL: USES (Uses)
(**cathodes**, in high-performance organic-electrolyte lithium **batteries**)

IT **25233-30-1, Polyaniline 25233-34-5, Polythiophene** 25718-66-5 **30604-81-0, Polypyrrole 51555-21-6**, Polycarbazole
RL: USES (Uses)
(doped, lithium-intercalatable, **cathodes**, in high-performance

organic-electrolyte lithium **batteries**)

IT 96-48-0, γ-Butyrolactone 96-49-1, 1,3-Dioxolan-2-one 108-29-2, γ-Valerolactone 108-32-7 109-99-9, uses 110-01-0, Thiolane 123-75-1, Pyrrolidine, uses **504-70-1**, Pyrazolidine 616-45-5, α-Pyrrolidone 695-06-7, γ-Ethyl-γ-butyrolactone 1003-10-7, γ-Thiobutyrolactone 1003-46-9, 2-Methylsulfolane 1679-49-8, β-Methyl-γ-butyrolactone 4437-70-1, 2,3-Butylene carbonate 4437-85-8, 1,2-Butylene carbonate 7791-03-9, Lithium perchlorate 10178-59-3 13423-15-9, 3-Methyltetrahydrofuran 14283-07-9, Lithium tetrafluoroborate 20628-59-5, Ethylene thiocarbonate 21324-40-3, Lithium hexafluorophosphate 33454-82-9, Lithium trifluoromethanesulfonate 89791-49-1 90076-65-6 131651-65-5
RL: USES (Uses)
(electrolyte containing, for high-performance and long cycle-life lithium **batteries**)

IT 1313-27-5D, Molybdenum oxide (MoO3), graphite intercalated with 1314-35-8D, Tungsten oxide (WO3), graphite intercalated with 1314-62-1D, Vanadium pentoxide, graphite intercalated with 1333-82-0D, Chromium oxide (CrO3), graphite intercalated with 7783-63-3D, graphite intercalated with 11115-86-9, Graphite iron chloride 11129-36-5 12036-21-4D, Vanadium oxide (VO2), graphite intercalated with 12039-13-3D, Titanium disulfide, graphite intercalated with 12067-45-7D, Titanium diselenide, graphite intercalated with 12166-28-8D, Vanadium disulfide, graphite intercalated with 12299-51-3D, Vanadium diselenide, graphite intercalated with 12672-50-3, Graphite cobalt chloride 12707-64-1 14477-72-6D, Trifluoroacetate, graphite intercalated with 14797-73-0D, Perchlorate, graphite intercalated with 14844-07-6D, Dithionite, graphite intercalated with 14874-70-5D, Tetrafluoroborate, graphite intercalated with 16919-18-9D, Hexafluorophosphate, graphite intercalated with 18868-43-4D, Molybdenum oxide (MoO2), graphite intercalated with 37181-39-8D, Trifluoromethanesulfonate, graphite intercalated with 37210-78-9 37348-79-1, Graphite iodine chloride 39345-60-3D, graphite intercalated with 39383-90-9 51358-33-9D, graphite intercalated with 58572-93-3 61008-50-2, Graphite magnesium chloride 61462-06-4, Graphite manganese chloride 61811-49-2, Graphite iodine bromide 63943-01-1D, graphite intercalated with 89172-94-1 89820-60-0 106496-65-5, Molybdenum potassium oxide (MoK0.3O3)
RL: USES (Uses)
(lithium-intercalatable, **cathodes**, in high-performance organic-electrolyte lithium **batteries**)

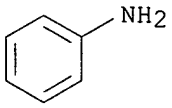
IT 7782-42-5, Graphite, uses
RL: USES (Uses)
(lithium-intercalatable, **cathodes**, in higq-performance organic-electrolyte lithium **batteries**)

IT **25233-30-1**, **Polyaniline 25233-34-5**, **Polythiophene 30604-81-0**, **Polypyrrole 51555-21-6**, Polycarbazole
RL: USES (Uses)
(doped, lithium-intercalatable, **cathodes**, in high-performance organic-electrolyte lithium **batteries**)

RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 62-53-3
CMF C6 H7 N



RN 25233-34-5 HCAPLUS
CN Thiophene, homopolymer (9CI) (CA INDEX NAME)

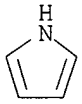
CM 1

CRN 110-02-1
CMF C4 H4 S

RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

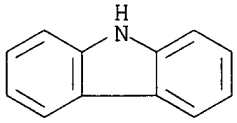
CRN 109-97-7
CMF C4 H5 N



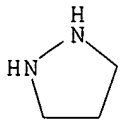
RN 51555-21-6 HCAPLUS
CN 9H-Carbazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 86-74-8
CMF C12 H9 N



IT **504-70-1**, Pyrazolidine
RL: USES (Uses)
(electrolyte containing, for high-performance and long cycle-life lithium **batteries**)
RN 504-70-1 HCAPLUS
CN Pyrazolidine (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)

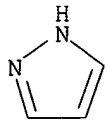


L149 ANSWER 73 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1992:534548 HCAPLUS
DN 117:134548
TI Electrically conductive films for **batteries** and electrochromic displays
IN Yoshinaga, Noriyuki; Fujimoto, Masahisa; Furukawa, Sanehiro
PA Sanyo Electric Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

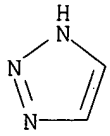
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 04137311	A	19920512	JP 1990-257693	19900926 <--
JP 3197554	B2	20010813		
PRAI JP 1990-257693		19900926 <--		

AB The films are prepared by treating an elec. conductive polymer with alkali, dispersing in a N-containing compound, applying on a substrate, and drying. NH4OH-treated **polyaniline** was dispersed in N-methyl-2-pyrrolidone for preparing **cathodes** for Li **batteries**.
IC ICM H01B0005-02
ICS H01B0001-12; H01M0004-02; H01M0004-60
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76
ST **battery cathode polyaniline** prepn; **polyaniline cathode** ammonium hydroxide treatment; methylpyrrolidone treatment **polyaniline cathode**
IT **Cathodes**
(**battery, polyaniline**, manufacture of, alkali treatment and nitrogen-containing dispersing agents in)
IT 1336-21-6, Ammonium hydroxide
RL: USES (Uses)
(conducting polymers treated with, for manuf of **electrodes** for **batteries** and electrochromic displays)
IT 68-12-2, N,N-Dimethylformamide, uses 75-12-7, Formamide, uses 123-75-1, Pyrrolidine, uses **288-13-1**, Pyrazole **288-36-8**, 1H-1,2,3-Triazole 288-94-8, 1H-Tetrazole **504-70-1**, Pyrazolidine 616-45-5, Pyrrolidone 638-31-3, 2-Pyrroline 872-50-4, N-Methyl-2-pyrrolidone, uses **1739-84-0**, 1,2-Dimethylimidazole
RL: USES (Uses)
(dispersing agent, in conducting polymer manufacture, for **batteries** and electrochromic displays)
IT **25233-30-1P, Polyaniline**
RL: PREP (Preparation)
(**electrodes**, alkali treatment and nitrogen-containing dispersing agents in manufacture of, for **batteries** and electrochromic displays)
IT **288-13-1**, Pyrazole **288-36-8**, 1H-1,2,3-Triazole **504-70-1**, Pyrazolidine **1739-84-0**, 1,2-Dimethylimidazole
RL: USES (Uses)
(dispersing agent, in conducting polymer manufacture, for **batteries** and electrochromic displays)

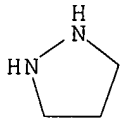
RN 288-13-1 HCAPLUS
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



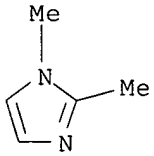
RN 288-36-8 HCAPLUS
CN 1H-1,2,3-Triazole (9CI) (CA INDEX NAME)



RN 504-70-1 HCAPLUS
CN Pyrazolidine (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



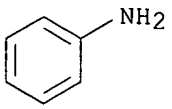
RN 1739-84-0 HCAPLUS
CN 1H-Imidazole, 1,2-dimethyl- (9CI) (CA INDEX NAME)



IT **25233-30-1P, Polyaniline**
RL: PREP (Preparation)
(**electrodes**, alkali treatment and nitrogen-containing dispersing agents in manufacture of, for **batteries** and electrochromic displays)
RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 62-53-3
CMF C6 H7 N



L149 ANSWER 74 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1992:534544 HCAPLUS
DN 117:134544
TI Secondary **batteries** with electroconducting-polymer **cathodes**
IN Yoshinaga, Noriyuki; Fujimoto, Masahisa; Furukawa, Sanehiro
PA Sanyo Electric Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 3 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI JP 04133275	A	19920507	JP 1990-255720	19900925 <--
JP 2999813	B2	20000117		
PRAI JP 1990-255720		19900925 <--		

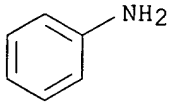
AB The **batteries** use conducting polymers prepared by electropolymn. in a N-containing compound solvent for their **cathodes**. Li **batteries** using **polyaniline cathodes** prepared in N-methyl pyrrolidone solns. had higher capacity than control **batteries**.
IC ICM H01M0010-40
ICS H01M0004-02; H01M0004-60
ICA C08G0061-12
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 35
ST conductive polymer **battery cathode**; aniline polymn **cathode** methyl pyrrolidone
IT Electric conductors, polymeric
(**cathodes**, preparation of, by electrolytic polymerization, nitrogen-containing compound solvents in, for **batteries**)
IT **Cathodes**
(**battery**, conducting polymer, preparation of, by electrolytic polymerization, nitrogen-containing compds. solvents in)
IT Polymerization
(electrochem., manufacture of conducting polymers by, for **battery cathodes**, nitrogen-containing compound solvents in)
IT **25233-30-1P**, **Polyaniline 30604-81-0P**, **Polypyrrole**
RL: PREP (Preparation)
(**cathodes**, preparation of, by electrolytic polymerization, nitrogen-containing compound solvents in, for **batteries**)
IT 68-12-2, N,N-Dimethylformamide, uses 75-12-7, Formamide, uses 123-75-1, Pyrrolidine, uses **288-13-1**, Pyrazole **288-36-8**, 1H-1,2,3-Triazole 288-94-8, 1H-Tetrazole **504-70-1**, Pyrazolidine 616-45-5, Pyrrolidone 638-31-3, 2-Pyrroline 872-50-4, N-Methyl-2-pyrrolidone, uses **1739-84-0**, 1,2-Dimethylimidazole
RL: USES (Uses)
(solvent, in electropolymn. preparation of conducting polymers, for **battery cathodes**)
IT **25233-30-1P**, **Polyaniline 30604-81-0P**,

Polypyrrole
RL: PREP (Preparation)
(**cathodes**, preparation of, by electrolytic polymerization, nitrogen-containing compound solvents in, for **batteries**)

RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

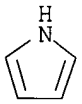
CRN 62-53-3
CMF C6 H7 N



RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

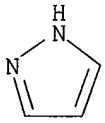
CM 1

CRN 109-97-7
CMF C4 H5 N

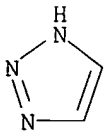


IT **288-13-1**, Pyrazole **288-36-8**, 1H-1,2,3-Triazole
504-70-1, Pyrazolidine **1739-84-0**, 1,2-Dimethylimidazole
RL: USES (Uses)
(solvent, in electropolymn. preparation of conducting polymers, for **battery cathodes**)

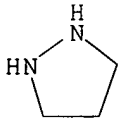
RN 288-13-1 HCAPLUS
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



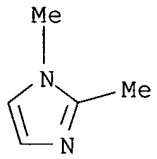
RN 288-36-8 HCAPLUS
CN 1H-1,2,3-Triazole (9CI) (CA INDEX NAME)



RN 504-70-1 HCAPLUS
CN Pyrazolidine (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



RN 1739-84-0 HCAPLUS
CN 1H-Imidazole, 1,2-dimethyl- (9CI) (CA INDEX NAME)



L149 ANSWER 75 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1992:493801 HCAPLUS
DN 117:93801
TI Secondary **batteries** with polymer **electrodes**
IN Yoshinaga, Noryuki; Fujimoto, Masahisa; Furukawa, Sanehiro
PA Sanyo Denki K. K., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 04104477	A	19920406	JP 1990-222005	19900822 <--
	JP 3108082	B2	20001113		
PRAI	JP 1990-222005		19900822 <--		

AB In **batteries** use conducting polymer **anodes** and/or **cathodes** and N-containing compds. as electrolyte solvents. The compds. are selected from pyrrolidone, pyrrolidine, pyrroline, pyrazole, pyrazolidine, imidazole, triazole, tetrazole, and their derivs. There **batteries** have high capacity d.
IC ICM H01M0010-40
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST polymer **battery** electrolyte solvent; nitrogen compd solvent **battery** electrolyte
IT **Battery electrolytes**
(lithium salts, nitrogen-containing compds. as solvents for)
IT **Batteries, secondary**
(polymer, nitrogen-containing compds. as solvents for)
IT **25233-30-1, Polyaniline 25233-34-5, Polythiophene 30604-81-0, Polypyrrole**
RL: USES (Uses)
(**electrodes, batteries** with, nitrogen-containing compds. as electrolyte solvents for)
IT 123-75-1, Pyrrolidine, uses **288-13-1**, Pyrazole **288-32-4**, Imidazole, uses 288-94-8, 1H-Tetrazole **504-70-1**, Pyrazolidine 616-45-5, Pyrrolidone 638-31-3, 2-Pyrroline 872-50-4,

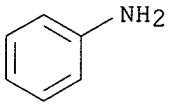
N-Methyl-2-pyrrolidone, uses 28350-87-0, Pyrroline 37306-44-8, Triazole
RL: USES (Uses)
(electrolyte solvent, for **batteries** with polymer **electrodes**)

IT **25233-30-1, Polyaniline 25233-34-5, Polythiophene 30604-81-0, Polypyrrole**
RL: USES (Uses)
(**electrodes, batteries** with, nitrogen-containing compds. as electrolyte solvents for)

RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 62-53-3
CMF C6 H7 N



RN 25233-34-5 HCAPLUS
CN Thiophene, homopolymer (9CI) (CA INDEX NAME)

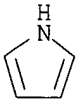
CM 1

CRN 110-02-1
CMF C4 H4 S

RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

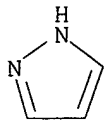
CRN 109-97-7
CMF C4 H5 N



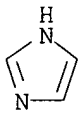
IT **288-13-1**, Pyrazole **288-32-4**, Imidazole, uses **504-70-1**, Pyrazolidine
RL: USES (Uses)
(electrolyte solvent, for **batteries** with polymer **electrodes**)

RN 288-13-1 HCAPLUS

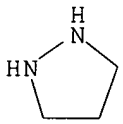
CN 1H-Pyrazole (9CI) (CA INDEX NAME)



RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)



RN 504-70-1 HCAPLUS
CN Pyrazolidine (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



L149 ANSWER 76 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1990:524677 HCAPLUS
DN 113:124677
TI Electrically conductive compositions with polyheteroaromates and polymer sulfates, their preparation, and their uses
IN Wernet, Wolfang; Stoffer, Jean
PA Ciba-Geigy A.-G., Switz.
SO Eur. Pat. Appl., 20 pp.
CODEN: EPXXDW
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	EP 358188	A2	19900314	EP 1989-116436	19890906 <--
	EP 358188	A3	19901031		
	EP 358188	B1	19970115		
	R: BE, CH, DE, FR, GB, IT, LI, NL, SE				
	US 5061401	A	19911029	US 1989-401352	19890831 <--
	JP 02113055	A	19900425	JP 1989-231802	19890908 <--
	US 34514	E	19940118	US 1992-876743	19920427 <--
PRAI	CH 1988-3374	A	19880909 <--		
	US 1989-401352	A5	19890831 <--		

AB The title compns. comprise ≥1 polyheteroarom. compound or aniline in oxidized polycationic form associated with ≥1 polyanion from a film-forming thermoplastic having structural repeating units incorporating sulfated alc. groups (C-O-SO3-). Preparation of the compns. by electrochem. polymerization of precursors in aqueous, organic, or mixed aqueous-organic solvent solns. is described, optionally including stretching the produced films or fibers at

temps. lower than their m.p. or decomposition temps. to enhance their conductivity
Use of the compns. as elec. conductors, **electrodes**, **battery cathodes**, electromagnetic shielding materials, antistatic packaging materials, conductive sealing materials, or in sensors is also described.
IC ICM H01B0001-12
ICS H01M0004-60
CC 76-2 (Electric Phenomena)
Section cross-reference(s): 27, 38
ST **battery cathode** conductor polymer compn; electromagnetic shielding conductor polymer compn; antistatic packaging conductor polymer compn; sensor conductor polymer compn; conductor polymer compn polyheteroarom sulfated polymer
IT **Cathodes**
(**battery**, polymeric conductive compns. from polyheteroarom. compds. with sulfated polymers for)
IT 10087-64-6D, 2,2'-Bispyrrole, compds. with sulfated polymers **25067-54-3D**, **Polyfuran**, compds. with sulfated polymers **25233-30-1D**, **Polyaniline**, compds. with sulfated polymers **25233-34-5D**, **Polythiophene**, compds. with sulfated polymers **30604-81-0D**, **Polypyrrole**, compds. with sulfated polymers 80029-99-8D, Poly(2,2'-bithiophene), compds. with sulfated polymers **82370-43-2D**, compds. with sulfated polymers **90967-54-7D**, compds. with sulfated polymers 128611-67-6D, compds. with sulfated polymers **128611-68-7D**, compds. with sulfated polymers **128611-69-8D**, compds. with sulfated polymers
RL: USES (Uses)
(elec. conductive compns. based on)
IT **30604-81-0DP**, compound with polybutadiene sulfate 128611-45-0P 128681-09-4P 128681-10-7P 128921-13-1P 128921-14-2P
RL: PRP (Properties); PREP (Preparation)
(preparation of elec. conductive)
IT **25067-54-3D**, **Polyfuran**, compds. with sulfated polymers **25233-30-1D**, **Polyaniline**, compds. with sulfated polymers **25233-34-5D**, **Polythiophene**, compds. with sulfated polymers **30604-81-0D**, **Polypyrrole**, compds. with sulfated polymers **82370-43-2D**, compds. with sulfated polymers **90967-54-7D**, compds. with sulfated polymers **128611-68-7D**, compds. with sulfated polymers **128611-69-8D**, compds. with sulfated polymers
RL: USES (Uses)
(elec. conductive compns. based on)
RN 25067-54-3 HCAPLUS
CN Furan, homopolymer (9CI) (CA INDEX NAME)

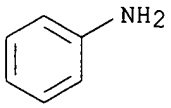
CM 1

CRN 110-00-9
CMF C4 H4 O

RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 62-53-3
CMF C6 H7 N



RN 25233-34-5 HCAPLUS
CN Thiophene, homopolymer (9CI) (CA INDEX NAME)

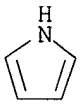
CM 1

CRN 110-02-1
CMF C4 H4 S

RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

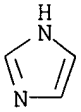
CRN 109-97-7
CMF C4 H5 N



RN 82370-43-2 HCAPLUS
CN 1H-Imidazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 288-32-4
CMF C3 H4 N2



RN 90967-54-7 HCAPLUS
CN Thiazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 288-47-1
CMF C3 H3 N S

RN 128611-68-7 HCAPLUS
CN Oxazole, homopolymer (9CI) (CA INDEX NAME)

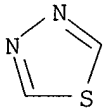
CM 1

CRN 288-42-6
CMF C3 H3 N O

RN 128611-69-8 HCAPLUS
CN 1,3,4-Thiadiazole, homopolymer (9CI) (CA INDEX NAME)

CM 1

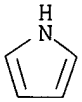
CRN 289-06-5
CMF C2 H2 N2 S



IT **30604-81-0DP**, compound with polybutadiene sulfate
RL: PRP (Properties); PREP (Preparation)
(preparation of elec. conductive)
RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 109-97-7
CMF C4 H5 N



L149 ANSWER 77 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1990:182916 HCAPLUS

DN 112:182916
TI **Batteries** with aluminum **anodes** and nonaqueous electrolytes
IN Kora, Nobuyuki; Akiyama, Tomoyuki; Sudo, Hajime; Takahashi, Kenichi
PA Tosoh Corp., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT **Patent**
LA Japanese
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 01296572	A	19891129	JP 1988-124948	19880524 <--
PRAI	JP 1988-124948		19880524 <--		

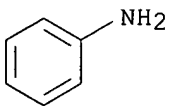
AB The title **batteries** have Al **anodes**, conducting polymer **cathodes**, and an electrolytes, which is a liquid at .apprx.20° and comprises Al trihalides and alkylimidazolium halides,. These **batteries** are inexpensive and light weight, have low self discharge, high voltage, and long cycle life. An electrolyte prepared from a 3:1 (mol) AlCl3-1,2,3-tributylimidazolium chloride mixture was used for an Al-**polyaniline battery** in example.

IC ICM H01M0010-36
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **battery** nonaq electrolyte aluminum halide; aluminum chloride nonaq **battery** electrolyte; imidazolium chloride nonaq **battery** electrolyte; butylimidazolium chloride nonaq **battery** electrolyte
IT **Batteries, secondary**
(aluminum-**polyaniline**, low-temperature molten aluminum halide-alkylimidazolium halide electrolytes for)
IT 7429-90-5, Aluminum, uses and miscellaneous
RL: USES (Uses)
(**anodes**, for **batteries** with low-temperature molten-salt electrolyte)
IT **25233-30-1, Polyaniline**
RL: USES (Uses)
(**cathodes**, for aluminum **batteries** with low-temperature molten-salt electrolytes)
IT 7727-15-3, Aluminum bromide
RL: USES (Uses)
(electrolyte containing alkylimidazolium bromide and, molten, for secondary aluminum **batteries**)
IT 7446-70-0, Aluminum chloride, uses and miscellaneous
RL: USES (Uses)
(electrolyte containing alkylimidazolium chloride and, molten, for secondary aluminum **batteries**)
IT **101023-58-9** 125400-93-3
RL: USES (Uses)
(electrolytes containing aluminum halides and, molten, for secondary aluminum **batteries**)
IT **25233-30-1, Polyaniline**
RL: USES (Uses)
(**cathodes**, for aluminum **batteries** with low-temperature molten-salt electrolytes)
RN 25233-30-1 HCAPLUS
CN Benzenamine, homopolymer (9CI) (CA INDEX NAME)

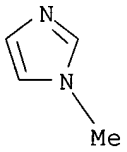
CM 1

CRN 62-53-3

CMF C6 H7 N



IT **101023-58-9**
RL: USES (Uses)
(electrolytes containing aluminum halides and, molten, for secondary aluminum **batteries**)
RN 101023-58-9 HCAPLUS
CN 1H-Imidazole, 1-methyl-, monohydrobromide (9CI) (CA INDEX NAME)



● HBr

L149 ANSWER 78 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1988:188070 HCAPLUS
DN 108:188070
TI Water-insoluble **proton-conducting** membranes
IN Zupancic, Joseph J.; Swedo, Raymond J.; Petty-Weeks, Sandra
PA UOP Inc., USA
SO U.S., 7 pp.
CODEN: USXXAM
DT **Patent**
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI US 4708981	A	19871124	US 1985-807727	19851211 <--
PRAI US 1985-807727		19851211 <--		

AB Title membranes, useful for gas separating and sensing, comprise interpenetrating networks of a host composition containing H2SO4 or H3PO4 and polymers from unsatd. compds., ethylene oxide, ethylenimine, or phenol-HCHO mixts., and a guest polymer formed from a monofunctional acrylic monomer different from that of the host polymer and difunctional acrylic crosslinking agents. Thus, solns. of 0.5 g poly(vinyl alc.) and 0.2 mL 85% H3PO4, and 2 g methylenebisacrylamide and 30.1 g methacrylic acid were prepared in 25 mL boiling water and water, resp. Mixing 6.7 mL and 10 mL of each solution, pouring into a polycarbonate Petridish, drying and irradiating with electron beam gave a membrane. Cutting the membrane into disk, sputter-depositing Pt **electrodes** on both sides of the disk, assembling this membrane onto a Teflon holder, and connecting with electricity through Cu platens while maintaining 1 atmospheric H pressure on 1 side and exposing the other side to a mixture of 10% H and 90% N for 24 h showed an output electromotive force (EMF) 29.2 mV and resistivity 2.0 + 106

Ω-cm. This was compared to an output EMF 0.1 mV when 100% H was present on both sides of the membrane.

IC ICM C08L0029-04
ICS C08L0033-02; C08L0041-00; C08L0043-02
INCL 525059000
CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): **72**
ST membrane gas sepn; sensor gas membrane; hydrogen sensor membrane; permselective membrane **proton conducting** polymer; electrolyte thin film gas sepn; polyvinyl alc membrane gas sensor; phosphoric acid membrane gas sensor; acrylamide polymer membrane gas sensor
IT Plastics, film
RL: USES (Uses)
(interpenetrating polymer blend, acid-containing, water-insol. **proton conducting**, for gas separating and sensing)
IT Membranes
(permselective, for gas separating and sensing, interpenetrating polymer blends for, water-insol., **proton-conducting**)
IT 7664-38-2, uses and miscellaneous 7664-93-9, uses and miscellaneous
RL: USES (Uses)
(membranes containing, interpenetrating-polymer blend-based, **proton -conducting** water-insol., for gas separating and sensing)
IT 25034-58-6 30280-72-9, Acrylic acid-methylenebisacrylamide copolymer 30421-16-0, Methacrylic acid-methylenebisacrylamide copolymer 114239-64-4, N,N-Diallylacrylamide-methacrylic acid copolymer
RL: USES (Uses)
(permselective membrane composites containing acid-modified polymer and, water-insol., **proton-conducting**, for gas separating and sensing)
IT 9002-89-5, Poly(vinyl alcohol) **9002-98-6** 9003-01-4, Poly(acrylic acid) 9003-05-8, Poly(acrylamide) 9003-35-4, Formaldehyde-phenol copolymer **25014-15-7**, Poly(2-vinylpyridine) 25087-26-7, Poly(methacrylic acid) **25232-41-1**, Poly(4-vinylpyridine) **25232-42-2**, Poly(N-vinylimidazole) 25322-68-3, Poly(ethylene oxide) **25805-17-8**, Poly(2-ethyl-2-oxazoline) 26101-52-0, Poly(vinyl sulfonic acid)
RL: USES (Uses)
(permselective membrane composites containing crosslinked polymers and acid-modified, water-insol. and **proton-conducting**, for gas separating and sensing)
IT **9002-98-6 25014-15-7**, Poly(2-vinylpyridine) **25232-41-1**, Poly(4-vinylpyridine) **25232-42-2**, Poly(N-vinylimidazole) **25805-17-8**, Poly(2-ethyl-2-oxazoline)
RL: USES (Uses)
(permselective membrane composites containing crosslinked polymers and acid-modified, water-insol. and **proton-conducting**, for gas separating and sensing)
RN 9002-98-6 HCAPLUS
CN Aziridine, homopolymer (9CI) (CA INDEX NAME)

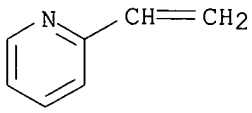
CM 1

CRN 151-56-4
CMF C2 H5 N

RN 25014-15-7 HCAPLUS
CN Pyridine, 2-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

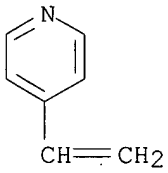
CRN 100-69-6
CMF C7 H7 N



RN 25232-41-1 HCAPLUS
CN Pyridine, 4-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

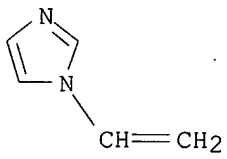
CRN 100-43-6
CMF C7 H7 N



RN 25232-42-2 HCAPLUS
CN 1H-Imidazole, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

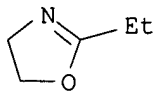
CRN 1072-63-5
CMF C5 H6 N2



RN 25805-17-8 HCAPLUS
CN Oxazole, 2-ethyl-4,5-dihydro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 10431-98-8
CMF C5 H9 N O



L149 ANSWER 79 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1988:64669 HCAPLUS
DN 108:64669
TI Electrically conductive polymer films and **electrode** materials coated with them
IN Naarmann, Herbert
PA BASF A.-G., Fed. Rep. Ger.
SO Ger. Offen., 5 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 1

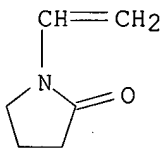
PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI DE 3609137	A1	19870924	DE 1986-3609137	19860319 <--
EP 241728	A1	19871021	EP 1987-103749	19870314 <--
R: BE, DE, FR, GB, NL				
PRAI DE 1986-3609137	A	19860319 <--		

AB Films containing elec. conductive polymers are formed by electrochem. polymerization of the monomers on flat **electrodes** in baths containing conductive salts. The films are used to coat **electrode** materials and and for antistatic finishing of plastics or for shielding electromagnetic waves. H2O, pyrrole, lignin sulfate, and Na dodecylsulfate were combined and the solution was polymerized at 22° and c.d. 3 mA/cm2 for 60 min. A **polypyrrole** film 100 μm thick with an elec. conductivity of 20 S/cm and a tear resistance of 40 N/mm2 was obtained.
IC ICM C25B0003-10
ICS C08F0002-58; C08F0002-44; C08L0045-00; C09D0005-24; H05K0009-00; H05F0001-02; G12B0017-02; C25D0013-08; H01B0001-12
ICA C08F0034-00; C08F0032-00; H01L0029-28; H01L0023-48
CC 72-9 (Electrochemistry)
Section cross-reference(s): 38, 76
ST polymn electrochem elec conductive polymer; **polypyrrole** film elec conductive **electrode**
IT **Electrodes**
(elec. conductive films for, by electrochem. polymerization)
IT Polymers, preparation
RL: PREP (Preparation)
(electrochem., for films for **electrodes**)
IT Polymerization
(electrochem., for forming elec. conductive films for **electrodes**)
IT Electric conductors
(film, for **electrodes**, by electrochem. polymerization)
IT 9002-86-2P, PVC 9003-09-2P 9003-19-4P, Poly(vinyl ether) **9003-39-8P**, Poly(vinyl pyrrolidone) 9004-67-5P, Cellulose methyl ether **25232-42-2P**, Poly(vinyl imidazole) **30604-81-0P**, **Polypyrrole**
RL: PREP (Preparation)

(elec. conductive films, electrochem. production of, for **electrodes**
)
IT 151-21-3, Sodium dodecyl sulfate, uses and miscellaneous 8068-05-1, Lignin sulfate
RL: USES (Uses)
(in electrochem. polymerization for formation of elec. conductive films for **electrodes**)
IT 26914-43-2, Styrene sulfonic acid 101211-94-3
RL: PRP (Properties)
(in electrochem. polymerization for formation of elec. conductive films for **electrodes**)
IT **9003-39-8P**, Poly(vinyl pyrrolidone) **25232-42-2P**, Poly(vinyl imidazole) **30604-81-0P**, **Polypyrrole**
RL: PREP (Preparation)
(elec. conductive films, electrochem. production of, for **electrodes**
)
RN 9003-39-8 HCAPLUS
CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

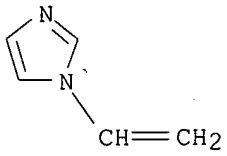
CRN 88-12-0
CMF C6 H9 N O



RN 25232-42-2 HCAPLUS
CN 1H-Imidazole, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

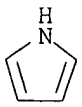
CRN 1072-63-5
CMF C5 H6 N2



RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 109-97-7
CMF C4 H5 N



L149 ANSWER 80 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1987:462049 HCAPLUS
DN 107:62049
TI Electrochemical method and apparatus using **proton-conducting** polymers
IN Zupancic, Joseph J.; Swedo, Raymond J.; Petty-Weeks, Sandra L.
PA UOP Inc., USA
SO U.S., 10 pp.
CODEN: USXXAM
DT **Patent**
LA English
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
US 4664761	A	19870512	US 1985-814339	19851227 <--
PRAI US 1985-814339		19851227 <--		

AB An interpenetrating polymer-network membrane for use as solid electrolyte in **fuel cells** or separation of H from gas mixture or other **electrochem.** processes involving H+ contains a host polymer blend of H3PO4 or H2SO4 mixed with a polymer or copolymer of ethyleneimine, acrylic acid, ethylene oxide, 2-ethyl-2-oxazoline, acrylamide, N-substituted acrylamide, 4-vinylpyridine, methacrylic acid, N-vinylimidazole, vinylsulfonic acid, 2-vinylpyridine, poly(hydroxyethylene), or PhOH-HCHO resin and a guest polymer of acrylic acid, methacrylic acid, acrylamide, methacrylamide, 2-acrylamido-2-methylpropanesulfonic acid, N-benzylacrylamide, N-ethylmethylacrylamide, N-phenylacrylamide, or N-phenylmethacrylamide crosslinked by methylenebisacrylamide, N,N-diallylacryllamide, m-xylenebisacrylamide, or N,N'-trimethylenebisacrylamide where the repeating units of the guest polymer is different from that of the host polymer. The membrane is coated with catalysts on opposite sides and used as partitioner to sep. 2 gas chambers in an apparatus An aqueous solution of H3PO4 and poly(vinyl alc.) and an aqueous solution of methylenebisacrylamide and methacrylic acid were mixed, poured into a Petri dish, H2O was evaporated, the film was irradiated by a 175-keV electron beam at 5 Mrad/pass from 1 side, cut into a 1"-diameter disk, and sputtered to form 400-Å Pt layers on both sides. This disk had a resistivity of 2 + 106 Ω-cm and a H flux of 1.8 + 10-5 ft3/ft2-h.

IC ICM C25B0001-02
ICS H01M0008-10
INCL 204129000
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 47, 49, **72**
ST polyvinyl alc phosphoric acid electrolyte; polymethacrylic acid solid electrolyte; **fuel cell** polymer solid electrolyte; hydrogen sepn polymer solid electrolyte
IT **Fuel cells**
(electrolytes for, solid polymer)
IT 30421-16-0, Methacrylic acid-methylenebisacrylamide copolymer
RL: USES (Uses)

(crosslinked, solid electrolytes containing, **proton-conductive**, for **fuel cells** and other **electrochem**. apparatus)

IT 7664-38-2, Phosphoric acid, uses and miscellaneous 7664-93-9, Sulfuric acid, uses and miscellaneous 9002-89-5 **9002-98-6** 9003-01-4, Poly(acrylic acid) 9003-05-8 9003-35-4, Formaldehyde phenol copolymer **25014-15-7**, Poly(2-vinylpyridine) 25087-26-7, Poly(methacrylic acid) **25232-41-1**, Poly(4-vinylpyridine) **25232-42-2**, Poly(N-vinylimidazole) 25322-68-3, Poly(ethylene oxide) **25805-17-8**, Poly(2-ethyl-2-oxazoline) 26101-52-0, Poly(vinyl sulfonic acid)
RL: USES (Uses)
(solid electrolytes containing, **proton-conductive**, for **fuel cells** and other **electrochem**. app)

IT **9002-98-6** **25014-15-7**, Poly(2-vinylpyridine) **25232-41-1**, Poly(4-vinylpyridine) **25232-42-2**, Poly(N-vinylimidazole) **25805-17-8**, Poly(2-ethyl-2-oxazoline)
RL: USES (Uses)
(solid electrolytes containing, **proton-conductive**, for **fuel cells** and other **electrochem**. app)

RN 9002-98-6 HCAPLUS
CN Aziridine, homopolymer (9CI) (CA INDEX NAME)

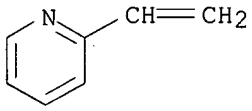
CM 1

CRN 151-56-4
CMF C2 H5 N

RN 25014-15-7 HCAPLUS
CN Pyridine, 2-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

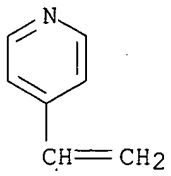
CRN 100-69-6
CMF C7 H7 N



RN 25232-41-1 HCAPLUS
CN Pyridine, 4-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

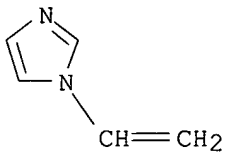
CRN 100-43-6
CMF C7 H7 N



RN 25232-42-2 HCAPLUS
CN 1H-Imidazole, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

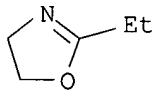
CRN 1072-63-5
CMF C5 H6 N2



RN 25805-17-8 HCAPLUS
CN Oxazole, 2-ethyl-4,5-dihydro-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 10431-98-8
CMF C5 H9 N O



L149 ANSWER 81 OF 81 HCAPLUS COPYRIGHT 2007 ACS on STN
AN 1985:169807 HCAPLUS
DN 102:169807
TI **Batteries**
IN Naarmann, Herbert; Muenstedt, Helmut
PA BASF A.-G. , Fed. Rep. Ger.
SO Ger. Offen., 19 pp.
CODEN: GWXXBX
DT **Patent**
LA German
FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	DE 3428843	A1	19850221	DE 1984-3428843	19840804 <--
PRAI	DE 1983-3328634	A1	19830809 <--		

AB A **battery** has ≥2 **electrodes**, the **electrode** active material of ≥1 **electrode** being from an elec. conducting, electrochem. oxidizable and/or reducible polymer, and an electrolyte from ≥1 ionic or ionizable compound

supporting electrolyte dissolved or suspended in an organic solvent. As the electrolyte solvent ≥1 non-crosslinked dimer and/or oligomer of a heterocyclic compound is used. Thus, a sealed **battery** containing poly(Me methacrylate) casing; a Li **anode**; a **polyacetylene** [25067-58-7] **cathode** doped with 6% AsF6-, elec. conductivity 100/Ω-cm; and a 0.5M LiAsF6 in THF-25% dioxane dimers electrolyte was prepared The **battery** with an initial voltage of 4 V was discharged continuously via a load resistance to 2 V and recharged, and >50 charge-discharge cycles were obtained with 100% yield.

IC ICM H01M0004-60
ICS H01M0006-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 27

ST **polyacetylene battery** electrolyte; dioxane dimer electrolyte **battery**; lithium hexafluoroarsenate electrolyte **battery**

IT **Batteries, secondary**
(lithium-**polyacetylene**, with electrolyte solvent of dimer and/or oligomer of heterocyclic compound)

IT 429-07-2
RL: USES (Uses)
(batter electrolyte containing THF dimer-, lithium-**polyacetylene**)

IT 123-75-1D, dimer
RL: USES (Uses)
(batter electrolyte containing, lithium hexafluoroantimonate-, lithium-**polyacetylene**)

IT 7791-03-9
RL: USES (Uses)
(**battery** electrolyte containing THF dimer-, lithium-**polypyrrole**)

IT 29935-35-1
RL: USES (Uses)
(**battery** electrolyte containing dioxane dimer and, lithium-**polyacetylene**)

IT 429-06-1
RL: USES (Uses)
(**battery** electrolyte containing indole dimer-, lithium-**polyacetylene**)

IT 123-91-1D, dimer
RL: USES (Uses)
(**battery** electrolyte containing lithium hexafluoroarsenate and, lithium-**polyacetylene**)

IT 109-99-9D, oligomer **288-32-4D**, dimer
RL: USES (Uses)
(**battery** electrolyte containing lithium hexafluoroarsenate-, lithium-**polyacetylene**)

IT 109-99-9D, dimer
RL: USES (Uses)
(**battery** electrolyte containing lithium perchlorate-, lithium-**polypyrrole**)

IT 18424-17-4
RL: USES (Uses)
(**battery** electrolyte containing pyrrolidine dimer-, lithium-**polyacetylene**)

IT **9003-39-8**
RL: USES (Uses)
(**battery** electrolyte containing tetraethylammonium hexafluorophosphate-, lithium-**polypyrrole**)

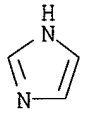
IT 120-72-9D, dimer
RL: USES (Uses)

(**battery** electrolyte containing tetraethylammonium tetrafluoroborate-, lithium-**polyacetylene**)

IT 25067-58-7 **30604-81-0**
RL: USES (Uses)
(**cathodes**, **battery**, with dioxane dimer-lithium hexafluoroarsenate electrolyte)

IT **288-32-4D**, dimer
RL: USES (Uses)
(**battery** electrolyte containing lithium hexafluoroarsenate-, lithium-**polyacetylene**)

RN 288-32-4 HCAPLUS
CN 1H-Imidazole (9CI) (CA INDEX NAME)

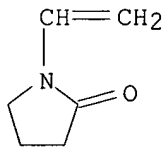


IT **9003-39-8**
RL: USES (Uses)
(**battery** electrolyte containing tetraethylammonium hexafluorophosphate-, lithium-**polypyrrole**)

RN 9003-39-8 HCAPLUS
CN 2-Pyrrolidinone, 1-ethenyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 88-12-0
CMF C6 H9 N O

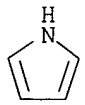


IT **30604-81-0**
RL: USES (Uses)
(**cathodes**, **battery**, with dioxane dimer-lithium hexafluoroarsenate electrolyte)

RN 30604-81-0 HCAPLUS
CN 1H-Pyrrole, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 109-97-7
CMF C4 H5 N



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=> d his

     (FILE 'HOME' ENTERED AT 14:44:46 ON 30 JAN 2007)
               SET COST OFF

     FILE 'HCAPLUS' ENTERED AT 14:44:55 ON 30 JAN 2007
L1             1 S US20040029003/PN OR (US2003-634607# OR JP2002-227160)/AP,PRN
                 E NOBUTA/AU
                 E NOBUTA T/AU
L2            22 S E3,E6
                 E NOBUTA NAME/AU
                 E TOMOKI/AU
                 E NISHIYAMA/AU
L3             1 S E3
                 E NISHIYAMA T/AU
L4            83 S E3
                 E NISHIYAMA TOSHI/AU
L5           178 S E6
                 E NISHIYAMA NAME/AU
L6             4 S E4
                 E TOSHIHIKO/AU
L7             1 S E3
                 E KAMISUKI/AU
L8            17 S E4,E5
                 E HIROYUKI/AU
L9             8 S E3
L10            1 S E34
                 E KANEKO/AU
L11            1 S E3
                 E KANEKO S/AU
L12          261 S E3,E4
L13           46 S E74,E76
                 E KANEKO NAME/AU
L14           29 S E4
                 E SHINAKO/AU
                 E KUROSAKI/AU
L15            1 S E3
                 E KUROSAKI M/AU
L16           16 S E3
L17           37 S E20
L18            8 S E39
                 E MASATO/AU
                 E NAKAGAWA/AU
                 E NAKAGAWA Y/AU
L19          547 S E3-E5
                 E NAKAGAWA YU/AU
L20           87 S E10
                 E NAKAGAWA NAME/AU
L21           40 S E4
                 E YUJI/AU
L22            8 S E3
L23           17 S E35
                 E MITANI/AU
                 E MITANI M/AU
L24           30 S E3,E4
L25           18 S E32
L26           14 S E60
                 E MASAYA/AU
L27            1 S E15
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                E NEC/PA,CS
L28          1019 S (NEC(L)TOKIN)/PA,CS
L29         13838 S PROTON(L)CONDUCT?
                E PROTON/CT
                E E12+ALL
L30          1687 S E2
                E PROTON/CT
L31         13838 S L29,L30
                E HETEROCYC/CT
L32          9757 S E23 (L) NITROGEN?
L33          9778 S HETEROCYCL?/CW,CT (L) NITROGEN?
L34            10 S L32,L33 AND L31
L35            18 S L1-L28 AND L31
L36             1 S L35 AND L32,L33
L37            17 S L35 NOT L36
L38           547 S PROTON? AND L32,L33

     FILE 'REGISTRY' ENTERED AT 14:55:06 ON 30 JAN 2007
L39             4 S 288-32-4 OR 288-88-0 OR 288-13-1 OR 51-17-2
L40               STR
L41               STR L40
L42               STR L41
L43            22 S L42 CSS SAM
L44        585600 S (16.195.22 OR 16.195.24)/RID
L45             7 S L42 NOT L*** CSS SAM SUB=L44
L46          6953 S L42 NOT L*** CSS FUL SUB=L44
                SAV TEMP L46 LAURA634/A
L47               STR L42
L48            18 S L47 NOT L*** CSS SAM
L49          5214 S L47 NOT L*** CSS FUL
                SAV TEMP L49 LAURA634A/A
L50               STR L47
L51               STR L50
L52            24 S L50 CSS SAM
L53             7 S L51 CSS SAM
L54            12 S L50 OR L51 CSS SAM
L55          2946 S L50 OR L51 CSS FUL
                SAV TEMP L55 LAURA634B/A
L56         15107 S L46,L49,L55
                SAV L56 TEMP LAURA634C/A
L57          1894 S L56 AND PMS/CI
L58           116 S L57 AND 1/NC
L59           115 S L58 NOT C2H4O
L60         13213 S L56 NOT L57
L61          9086 S L60 AND 1/NC
L62           858 S L61 AND IDS/CI
L63          8228 S L61 NOT L62

     FILE 'HCAPLUS' ENTERED AT 15:26:17 ON 30 JAN 2007
L64         56560 S L39 OR L59 OR L63
L65          4737 S L56 NOT L64
L66           147 S L64 AND L31
L67            36 S L65 AND L31
L68           199 S L66,L67,L36,L37
L69            46 S L68 AND ?ELECTROD?
                E ELECTRODE/CT
L70             4 S E3
                E E96+ALL
L71        221575 S E3+NT
                E ELECTROCHEMICAL CELL/CT
```

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                E E4+ALL
L72       107218 S E3+NT
                E E21+ALL
L73        35395 S E3+NT
                E BATTERY/CT
L74        58288 S E4+OLD,NT OR E5+OLD,NT OR E6+OLD,NT OR E7 OR E8+OLD,NT
                E E9+ALL
L75         8767 S E2+OLD,NT OR E3+OLD,NT OR E4+OLD,NT
                E BATTERIES/CT
                E E3+ALL
L76       120002 S E1 OR E2+OLD,NT OR E3+OLD,NT OR E4+OLD,NT OR E5+OLD,NT
L77          114 S L68 AND L70-L76
L78          121 S L69,L77
L79           15 S L78 AND PY<=2003 NOT P/DT
L80           45 S L78 AND (PD<=20030521 OR PRD<=20030521 OR AD<=20030521) AND P
L81            4 S L1-L28 AND L64,L65
L82            1 S L1-L28 AND L32,L33
L83            4 S L81,L82
L84            3 S L83 NOT ARYL/TI
L85           62 S L79,L80,L84
L86           60 S L85 AND ELECTR?/SC,SX
L87           62 S L85,L86
L88           62 S L87 AND L1-L38,L64-L87
L89           61 S L88 AND PROTON?
L90            1 S L88 NOT L89
L91           62 S L89,L90
                SEL HIT RN

     FILE 'REGISTRY' ENTERED AT 15:34:17 ON 30 JAN 2007
L92           23 S E1-E23

     FILE 'HCAPLUS' ENTERED AT 15:34:43 ON 30 JAN 2007
L93        15189 S POLYANILINE
L94         8031 S POLYTHIOPHENE
L95        12341 S POLYPYRROLE
L96        14936 S POLYACETYLENE
L97         6272 S POLY()(PARA OR P OR 4)()PHENYLENE
L98          672 S POLYPHENYLENE VINYLENE
L99           57 S POLYPERINAPHTHALENE
L100         467 S POLYFURAN
L101           0 S POLYFLURANE
L102           0 S POLY FLURANE
L103         162 S POLYTHIENYLENE
L104          54 S POLYPYRIDINEDIYL
L105         171 S POLYISOTHIANAPHTHENE
L106         863 S POLYQUINOXALINE
L107          25 S POLYAMINOANTHRAQUINONE
L108          42 S INDOLE TRIMER
L109          21 S POLYANTHRAQUINONE
L110          35 S POLYBENZOQUINONE
                S 67987-55-7/REG# OR  91201-85-3/REG# OR  28411-42-9/REG# OR  2

     FILE 'REGISTRY' ENTERED AT 15:44:19 ON 30 JAN 2007
L111           1 S 25190-62-9/RN

     FILE 'HCAPLUS' ENTERED AT 15:44:20 ON 30 JAN 2007
L112        1737 S L111

     FILE 'REGISTRY' ENTERED AT 15:44:20 ON 30 JAN 2007
L113           1 S 96638-49-2/RN
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     FILE 'HCAPLUS' ENTERED AT 15:44:21 ON 30 JAN 2007
L114          792 S L113

     FILE 'REGISTRY' ENTERED AT 15:44:21 ON 30 JAN 2007
L115            1 S 114239-80-4/RN

     FILE 'HCAPLUS' ENTERED AT 15:44:22 ON 30 JAN 2007

     FILE 'REGISTRY' ENTERED AT 15:44:26 ON 30 JAN 2007
L111           18 S 67987-55-7 OR 91201-85-3 OR 28411-42-9 OR 25233-30-1 OR 25233

     FILE 'HCAPLUS' ENTERED AT 15:45:10 ON 30 JAN 2007
L112          868 S L111 AND L64,L65
L113           94 S L112 AND L70-L76
L114            2 S L113 AND PY<=2003 NOT P/DT
L115           51 S L113 AND (PD<=20030521 OR PRD<=20030521 OR AD<=20030521) AND
L116           53 S L114,L115
L117           98 S L91,L116
L118           11 S L117 AND L1-L28
                  SEL RN

     FILE 'REGISTRY' ENTERED AT 15:47:09 ON 30 JAN 2007
L119           51 S E24-E74
L120           18 S L119 AND N/ELS AND PMS/CI
L121            3 S L120 AND (C5H6N2 OR C34H20N4 OR C48H28N8)
L122            8 S L120 AND (NCNC2-C6 OR NC2 OR NC4-C6 OR NCNC3 OR NC5)/ES

     FILE 'HCAPLUS' ENTERED AT 15:49:21 ON 30 JAN 2007
L123           29 S L121,L122 AND L117
L124           87 S L117 NOT L118

     FILE 'REGISTRY' ENTERED AT 15:49:34 ON 30 JAN 2007

     FILE 'HCAPLUS' ENTERED AT 15:49:34 ON 30 JAN 2007
L125              TRA L124 1- RN :     1342 TERMS

     FILE 'REGISTRY' ENTERED AT 15:49:36 ON 30 JAN 2007
L126              TRA L124 RN         RAN=(ALL)

     FILE 'REGISTRY' ENTERED AT 15:49:36 ON 30 JAN 2007
L126         1342 SEA L125
L127         1342 S L125
L128          154 S L126 AND PMS/CI AND N/ELS
L129          146 S L128 NOT L120
L130           66 S L129 AND 1/NC
L131           20 S L130 AND (C12H6N6 OR C20H12N4 OR C33H20N4O6 OR C14H8N4 OR C13
L132           38 S L130 AND (NC5 OR NCNC3 OR NCNC3-C6-C6 OR NCOC2 OR NC5-C6 OR N
L132           38 S L130 AND (NC5 OR NCNC3 OR NCNC3-C6-C6 OR NCOC2 OR NC5-C6 OR N
L133           37 S L132 NOT FE/ELS
L134           48 S L131,L133
L135           18 S L130 NOT L134
L136            3 S L135 AND (N2CSC OR NC4)/ES
L137           51 S L134,L136

     FILE 'HCAPLUS' ENTERED AT 15:58:56 ON 30 JAN 2007
L138           46 S L137 AND L117
L139            0 S L1181,L123,L138
L139           59 S L118,L123,L138
L140           39 S L117 NOT L139
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L139          59 S L118,L123,L138
L139           1 S L1
L138          46 S L137 AND L117
L139          59 S L118,L123,L138
L140          39 S L117 NOT L139
L141          36 S L139 AND (PROTON? OR HETERO?(L)NITROGEN?)
L142          59 S L139 AND (FUEL CELL OR ELECTROCHEM?(L)CELL OR BATTERY OR ANOD
L143           0 S LD141,L142
L143          59 S L141,L142
L142          59 S L139 AND (FUEL CELL OR ELECTROCHEM?(L)CELL OR BATTERY OR ANOD
L138          46 S L137 AND L117
L139          59 S L118,L123,L138
L140          59 S L139 AND (FUEL CELL OR ELECTROCHEM?(L)CELL OR BATTERY OR ANOD
L141          39 S L117 NOT L140
L142          39 S L141 AND (FUEL CELL OR ELECTROCHEM?(L)CELL OR BATTERY OR ANOD
L143          59 S L140 AND L1-L38,L64-L91,L93-L110,L112-L118,L123,L124,L138-L
L144          39 S L142 AND L1-L38,L64-L91,L93-L110,L112-L118,L123,L124,L138-L
L145          98 S L143,L144
L146          17 S L145 NOT P/DT
L147          81 S L145 NOT L146
L148          80 S L147 AND (PD<=20030521 OR PRD<=20030521 OR AD<=20030521)
L149           1 S L147 NOT L148
L149          81 S L147,L148

     FILE 'REGISTRY' ENTERED AT 16:06:45 ON 30 JAN 2007

     FILE 'HCAPLUS' ENTERED AT 16:07:02 ON 30 JAN 2007

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